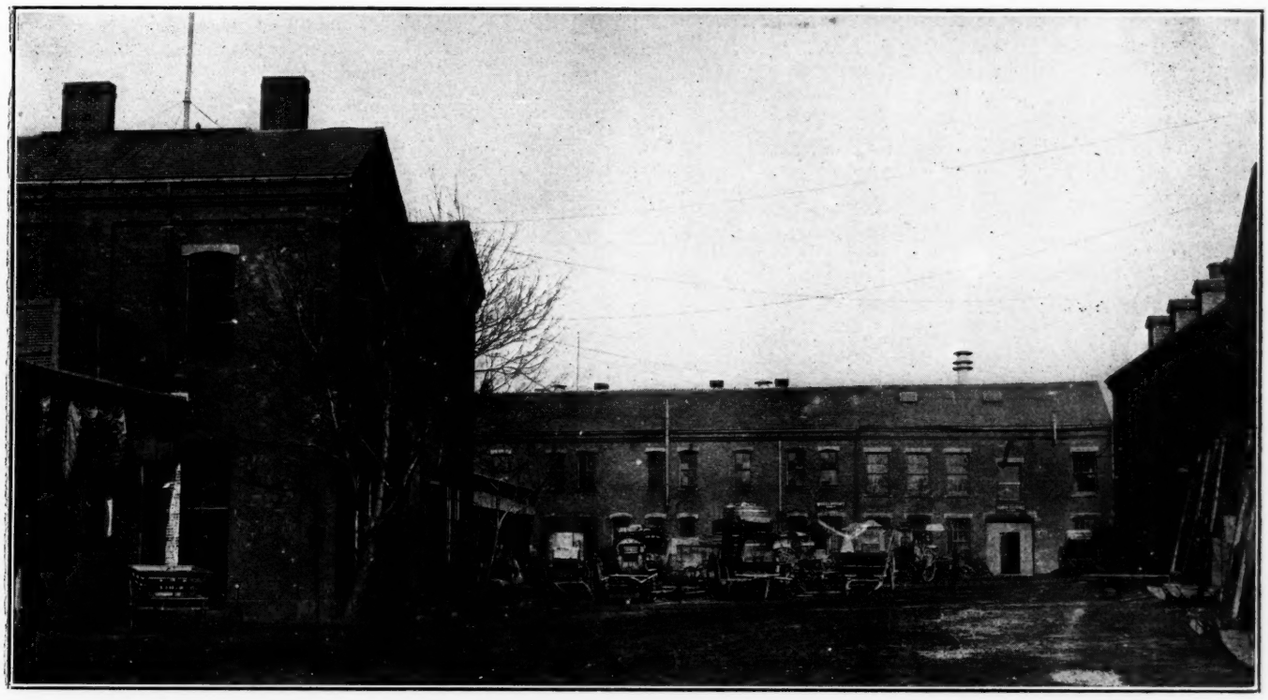
Municipal Journal

Volume XXXII. NEW YORK, MARCH 14, 1912. No. 11



GENERAL VIEW OF SOUTH END YARD

Shops in the background. Offices and sheds at the left. Stables at the right. Wagons, sprinklers and other vehicles in the yard.

BOSTON MUNICIPAL YARDS AND SHOPS

Yards Used by Department of Public Works in Each of Several Districts—Harness, Paint, Blacksmith, Carpenter, Wheelright and Horseshoeing Shops—Repairing and Some New Construction Done Here

PRIOR to 1911 the Street Department of the city of Boston was organized with a central office and five divisions known as the Ferry, Highway, Lamp, Sanitary and Sewer Divisions. In February of 1911 the department was reorganized into a Department of Public Works with three divisions, namely, Sewer and Water, in charge of the mains and other underground work connected with these two systems; Highways, which includes street paving, street lighting, street cleaning and refuse collection services, and the Division of Ferries and Bridges. Mr. Louis K. Rourke, who had previously been superintendent of streets, was made commissioner of public works, and a division engineer was appointed for each of the three divisions named, these being Frank A. McInnes, James H. Sullivan and Frederick H. Fay for the several divisions in the order named above. A detailed description of this organization will be found in our issue of December 21, 1910.

Several yards are used by the city for storing material and also for the carts, sweepers and other vehicles used by the department, most of these having also a stable attached In order to facilitate the work, these yards are scattered throughout the several districts of the city, rather than endeavoring to use one yard only for the entire area. This is the more necessary in the case of a city like Boston, where the districts are separated by bodies of water, some of them being practically islands surrounded by arms of the harbor. The yards used for the street cleaning and refuse collection services are as follows: In South Boston, a rented yard containing stable, carriage house, shed, tool house and office. In East Boston, sheds, stable and office are located on a wharf property containing nearly eight acres of leased property, this being used jointly by the street cleaning and watering, sewer and sanitary services. In Charleston a shed, stable and office. In Brighton a stable,

shed and office are located on a quarry property, and a stone crusher also is located here. In West Roxbury there is one lot containing sheds, stable and office and two others (one of which is rented) used for storage purposes. In Dorchester are two lots, one containing two stables, shed, tool house and office; the other a steam engine and stone crusher, stable and tool houses. In Roxbury is a brick stable used by the street cleaning and paving divisions, where also is a blacksmith shop and shed, and on another lot are a steam engine, stone crusher and scales. On a South End lot are stables, office, blacksmith, carpenter and other shops and storage sheds, and another in this district, which is rented from the railroad company, is used for storage purposes. In the North End are a lot containing a stable, shed and office building and another leased property used for storage purposes. Except where otherwise stated, all of these properties are owned by the city.

None of the stone crushers referred to is now used by the city, which buys all its broken stone by contract. One plant, however, has been leased to a contractor, who pays the city for each ton of stone quarried.

Probably the most interesting of the yards is that in the South End, on Albany street, where are located the principal shops of the department. At this yard is a large brick stable with 102 stalls and a smaller stable to provide for the overflow from the larger and also for the temporary use of new horses which are being "tried out" for the department. The large stable was built about forty years ago, but has been kept up in good condition. There is also a horse hospital containing four open stalls and two box stalls. A veterinary looks after all sick and injured horses and also makes daily inspection of all the horses, gives directions as to shoeing, feeding, etc. There also are five wooden sheds and a large open yard for sheltering the sweepers, carts, flushers, etc. Over the stable is a large feed loft where the various kinds of feed are kept in bins and delivered by chutes to the floor below. There is also a storeroom for street and stable brooms and other small apparatus. The shops are housed in brick buildings and are quite complete, consisting of a harness shop, paint shop, blacksmith shop, carpenter shop, wheelwrights' shop and horseshoeing shop, each of these being in a separate room. The original cost, exclusive of the land, was about $79,000. The buildings are placed around the four sides of a rectangle, enclosing a court or yard, the office being on the two sides of the wagon entrance.

In the harness shop all leather repair work is done, such as repairing of harness, cushions in wagon and automobile seats, and any other leather work connected with any of the apparatus. When the force is not busy with repair work it is employed making new harness, but little time is found for this, and most of the harness is purchased outside. The same may be said of all the other shops; that new carts, sprinkling wagons, etc., are occasionally manufactured entire when the force can find time for this, but the majority are purchased from regular dealers. Mr. M. J. Concannon, foreman of the stables and of District No. 8 of the street cleaning service, to which district this yard is attached, believes that, while the cost of building new carts by the city shops is 10 to 25 per cent. greater than the purchase price of similar vehicles, more than this would be saved in greater durability and facility in repairing vehicles of the city's own manufacture.

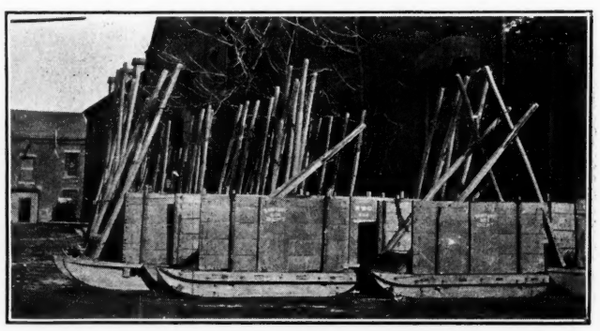
In the paint shop are painted all the wagons, cans, and all other appliances used by the department, including street signs, all of which are made by the city. Similarly the blacksmith and wheelwright shops do all of the wood and metal work required in the construction and repair work done by the department, and all the horses of this district are shod at this shop.

Stable brooms are made at these shops but brooms for the machine sweepers are refilled by contract at $8 each. The average life of a broom is found to be fourteen days, this varying from about twelve to sixteen, depending upon the nature of the street pavement on which it is used.

Having the shops makes it possible to try out various ideas and suggestions of city employes and others at little expense. For instance, it has been found in Boston as in other northern cities, that there are times in winter when the dust occasioned by sweeping is very considerable, and yet attempts to prevent it by sprinkling would only result in the immediate formation of ice on the street surface. During the past winter the department has been experimenting with a suggestion made to them that the use of calcide (that obtained by the Solvay process was used) might meet this objection, and a small tank for holding this was placed on each of two sweepers, a one-inch pipe from the tank being supported directly over the sweeper and provided with small holes on its under side through which the calcide solution is sprayed onto the broom. Another sprinkler was fitted up with a similar appliance for using dust laying oil in the same way. The brief experience had with these methods does not lead the department to think very favorably of either of them. It has been suggested that the calcide might be used in the sprinkling cart in the same way that water is used in the summer time, the solution being strong enough to prevent freezing.

As stated above, this yard is used by the sanitary as well as the street cleaning service. Each of these has an office, and in the main stable the horses of the two services are kept separate. On the sanitary side there is at this yard a storekeeper and storeroom, where all items other than the large apparatus are purchased by the storekeeper on monthly requisitions by him, and are given out by him daily on duly authorized requisitions, the storekeeper keeping an exact account of the material used on each repair job or for whatsoever purpose, and the total cost of the material used on each job.

The street cleaning service of the city is in charge of J. J. Norton, general foreman, who has under him nine foremen, one in charge of each district, and 26 inspectors. Fifty-four draft horses and four driving horses used by the Street Cleaning Department are stabled here. Altogether fourteen men are employed in the stable, this including three night men (part of the duties of which is to clean the harness), a watchman and a clerk.



ASH AND GARBAGE BODIES ON RUNNERS.
For use after heavy snow storms.

At the south yard and stable the Street Cleaning Department has 27 sweeping machines, 9 sprinklers used in connection with the sweepers, 7 squeegees and one flushing machine. The last named has been in service only about a year and is being tested by the department with a possible view to the purchase of more. There are also one hundred carts employed for removing sweepings, these having a capacity of about 55 cubic feet each. About one hundred "push cart men" are used for patrol cleaning in the business district, and these are provided with the customary equipment of steel dirt cans and carriers for the same, brooms, scrapers, etc.

By the latest report there were in the various shops and stables of the Highways Department 24 blacksmiths and assistants, 38 carpenters and assistants, 6 harness makers and assistants, 5 wheelwrights, 17 painters, 8 horseshoers, 92 stablemen and hostlers, and a blanket repairer; 103 of which were in the street cleaning and refuse collection service.

The cost of maintaining all the shops is given as $54,539 for both labor and material. At the shops at this South End yard the work done and material delivered cost as follows: Wheelwright shop, $12,328.42; blacksmith shop, $11,922.01; paint shop, $9,443.99; harness shop, $8,854.75; horseshoeing, $5,525.12; this constituting about 90 per cent. of all the construction and repair shop work done by the city.

The expenses of stables, including drivers, feeders, fodder, horseshoeing and repairs to harness, carts, etc., was $110,237.16, of which $67,163.15 was for maintaining horses, which averages $1.308 per horse per day. Of the last sum 47 cts. was for labor, 55 cts. for hay and grain, 7.9 cts. for fuel, light and rent, 11.4 cts. for shoeing, 1.9 cts. for stable repairs, 4 cts. for veterinary services and medicine, and 3.6 cts. for furnishings and repairs. The total per horse varied from $1.777 at one stable with 11 horses to $1.176 at another with 13 horses. At the south stable are kept nearly half of all the city's horses, and here the cost was $1.223.

MILWAUKEE WATER WASTE SURVEY

Pump Slip Discovered and Reduced—Slip of Meters Investigated—Pitometer Measurements—Sewer Inspection—Economy of Waste Elimination

As preliminary to a general investigation of the efficiency of the municipal water works plant and department, the Bureau of Economy and Efficiency of Milwaukee has made a survey of the water wastes in the city, Ray Palmer and W. R. Brown being in charge of the work, under the direction of associate director B. M. Rastall.

The supply of the city is pumped, and one of the first proceedings was to determine the slip of the pumps, which was done by means of pitometers. The pumps were found to have various amounts of slip, varying from one per cent. to 43 per cent. The pump showing the latter slip was thoroughly overhauled and new rubber valves inserted of a much softer material than had formerly been used, after which the slip was found to be reduced to 10 per cent. Many of the valves which were fitted with hard rubber disks were found cracked and worn. The hard rubber seating face of the valves and the brass seats had become so badly worn from the action of sand that practically all of them had to be refaced before being put back into service.

In making the survey the city was divided into districts, and two of these, embracing part of the retail, wholesale, office building and tenement house section of the city, had been investigated previous to the publication of a bulletin on the subject at the beginning of this year. In addition to these, a general survey was made of the high level section of the city and of the river crossings. The first district contained 46,054 feet of water mains, over one-half of which were 6-inch, the remainder running up to 20-inch diameter. The total number of service pipes was 1,821, 1,224 of which were metered, and 437 of which had been abandoned. Twenty of the 160 unmetered service pipes supplied municipal buildings and other public consumption in the district, and 33 supplied fire sprinkling systems.

The superintendent of the meter division reported the average slip of 3,431 meters of the piston type to be 3.15 per cent. and the average of 1,955 of the disk type to be .6 per cent. The former had been in service from 15 to 23 years when the tests were made, and the disk meters had been in service about ten years, and neither had been out for repairs within the past five years. As these were the oldest meters in service and consequently probably showed the largest slip, it was thought fair to assume that the average slip of the meters was about one per cent. As the estimates of other factors in the problem would probably contain errors greater than this the slip of meters was disregarded.

Inspections were made of all the premises in a subsection of the district, which showed that the plumbing fixtures in most metered places were tight, while in the few assessment plan premises there was evidence of defective plumbing and that water was being misused.

Inspections of the sewers throughout this sub-section were made and locations noted where the sewer flow increased; and two leaks from defective fire hydrants were discovered in this way. A trip through a five-foot sewer showed 20 service pipes passing through it within a length of three blocks, two of which were leaking badly directly into the sewers, one discharging 20,000 gallons a day and the other 5,000 gallons. Many of these service pipes were found badly sagged from the weight of rubbish caught on them. This seemed to prove conclusively that the installing of service pipes through sewers or the building of sewers around service pipes is poor practice, as the pipes are a danger and a hindrance to the operation of sewers, and some of the worst leaks will occur with no possible chance of detection from surface indication. (Incidentally, we have found cases where 4 and 6-inch water mains built through a storm sewer have been broken off either through settling or by heavy timbers carried by the storm water.

There are two 16-inch river crossings, two 20-inch, one 30-inch and four 36-inch. Pitometer tests of these showed them to be in a good, tight condition.

From the various investigations it was estimated that 17 per cent. of the total supply was consumed for public use and 20 to 25 per cent. was unaccounted for. A considerable amount of the public consumption they believed to be waste or unnecessary consmption. "For example, the ten horse troughs measured showed an average daily consumption of 15,300 gallons. If a rate sufficient to allow two horses to drink six gallons in 2½ minutes be maintained, the consumption for 24 hours would be 3,500 gallons. Of the 2,500 gallons per 24 hours used in one bubbling drinking fountain probably not over 150 or 200 gallons were actually used for drinking purposes. If these fountains were controlled by spring cocks so that the flow was cut off automatically when not in use the consumption should be kept down to 500 gallons or less per day." A fountain at the City Hall is surrounded by a trough from which horses are watered; but this trough receives a separate supply, while it was stated that there would be no difficulty in supplying this trough by overflow from the fountain, and thus saving 50,000 or 60,000 gallons per day.

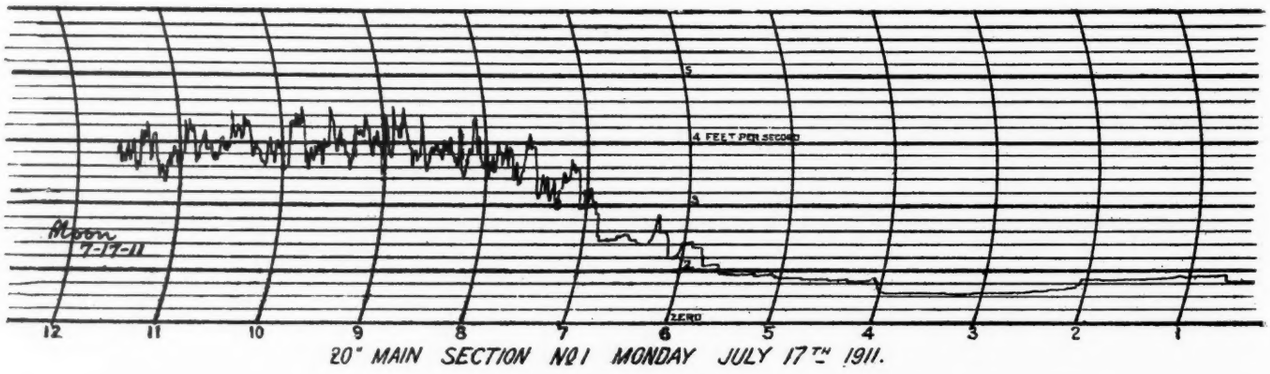
"That waste wherever found should be stopped, if possible, is generally considered a basic economic principle; but if the reduction of waste is accomplished at a greater expense than the saving produced, such waste should be allowed to exist or more efficient means of elimination used. For example: if a thorough campaign were entered into which finally brought about the elimination of practically all of this waste of water at a considerable outlay of expense, and the system were allowed to lapse into an equally bad condition within a limited period of years, it would be hard to say whether the effort and expense involved were justified. Whereas if, on the other hand, the location and eliminating of waste were carried on systematically and the best methods established locally, there would be a great saving to the city during and after the work of elimination, as the waste could be kept low by checking up the different districts from year to year at a small expense.

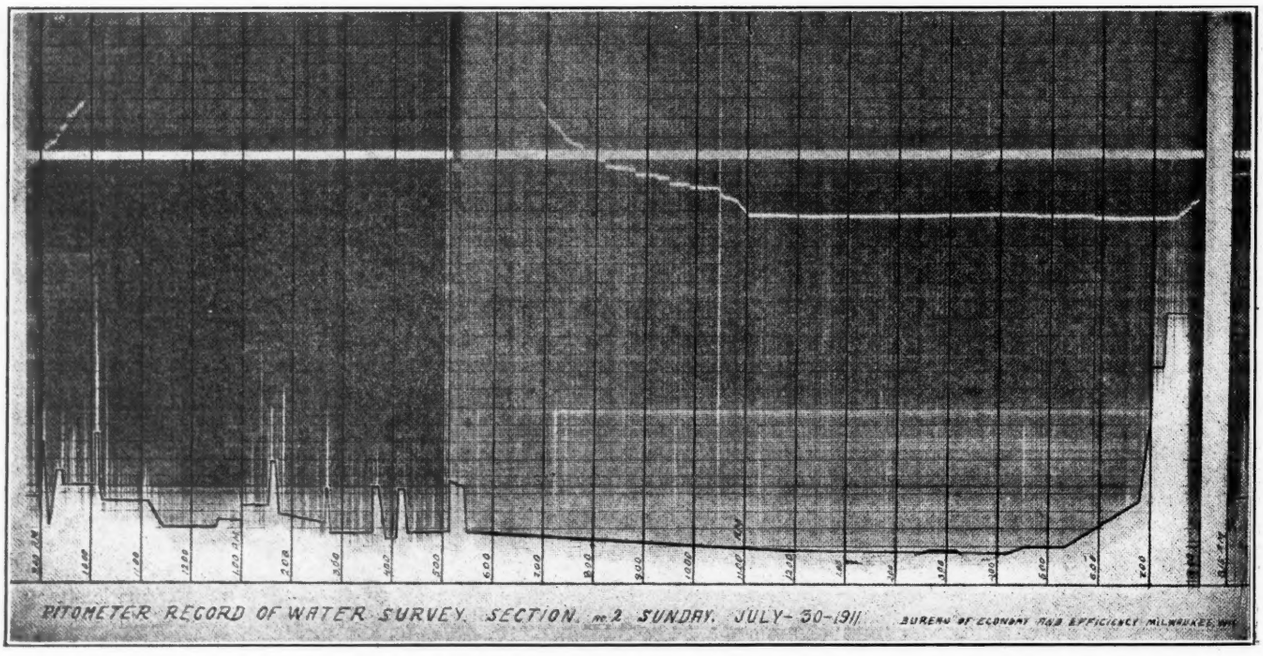
"It has been repeatedly shown from the operation and maintenance statistics of other water systems that while large savings can be made by inspecting and forcing repairs on unmetered premises, the total net saving accomplished after all necessary inspections are made does not warrant the expenditure and effort." Other methods of eliminating waste, however, are recommended as securing financial returns, one of the most important being the discovery and repair of underground leaks. For instance, it was estimated that in Milwaukee the reduction in cost of coal alone would amount to $5,000 per year if most of the underground leakage could be stopped. This amount would cover the yearly expense of a good waste survey organization to carry on efficient work in locating bad territories and tracing down trouble. An additional fund would have to be available for bearing the increased maintenance expense required for correcting the defects as they were located.

"The saving to the city in stopping the waste from mains and service pipes, while large, would not be as great per thousand gallons as through the metering of the unmetered services, as the revenue by the city at 6 cents per thousand gallons is at a much higher rate than could be credited to any saving of water now lost through water mains. The value per thousand gallons which could be credited to water main leakage would consist of the actual cost of pumping and distributing of water to the location of leakage, including a fair interest on the necessary investment involved and a properly applied depreciation of the pumping and distribution system."

The Bureau recommends:

1. That all private water consumers be supplied through meters, this including sprinkler systems, elevator service, etc. It was believed that the principal source from which illegal use would occur would be through unmetered connections of fire sprinkler systems.
2. That the ownership and maintenance of service pipes lie with the city, or that better standards of service pipe construction and inspection by the city be established to insure the proper installation of the very best materials at a reasonable expense.
3. That all public services, including parks, public buildings, fountains and drinking troughs, be metered so as to regulate their useful consumption.
4. That the water works so distribute hydrant wrenches to individuals and corporations as to assure the city a fair income from such use and protection against their misuse.
5. That all newly laid mains be tested by means of some such equipment as a small portable gasoline engine and pump to insure tight connections under high pressure before placing them in service.
6. That the city purchase necessary pitometers or recording meters to be used regularly to check the slippage of all operating pumps so that the pumping station log sheet will show the slip of the pumps at the last test and the actual number of gallons pumped each day.





Records Made with a Pitometer (Upper Illustration) and a Directograph Pitometer (Lower Illustration)

BROOKLYN'S ASPHALT PAVEMENTS

Editor MUNICIPAL JOURNAL AND ENGINEER,
50 Union Square, New York.

Dear Sir:—In the MUNICIPAL JOURNAL of February 1, 1912, in an article on the cost of maintenance of asphalt pavements, there appears a statement which seems to cast a reflection upon this Bureau as to the method of the acceptance of asphalt pavements as they come out of guarantee.

We have always prided ourselves on the splendid condition in which the asphalt streets of this borough were placed under the final maintenance clause in our contract. I know that the conclusion reached by the author is entirely wrong and consequently should be corrected.

An engineer in this borough, who has had charge of the acceptance of these streets in past years, has been credited in several engineering magazines with having refused to accept a street owing to the fact that "the asphalt still contained waves of sufficient magnitude to make water hesitate." It certainly must have been a great surprise to him to read your statement, which is so at variance with his efforts.

The statements in your article particularly referred to are as follows:

"One of these is that during the first year out of guarantee the cost of repair was above the line of average cost in each case, and higher than the cost during the second year. Still more notable is the fact that the general direction of the line of medium cost streets cannot, by any fudging, be made to originate at the zero of co-ordinates." * * *

"But one explanation of these peculiarities occurs to us, namely, that in the cases of Rochester and Buffalo, the streets, when taken over by the city, are practically as good as new and need little or no repairing for two or three years. In the case of the Brooklyn streets, however, it is very apparent that the streets are not in good condition when taken over by the city, since they need extensive repairing the first year out of guarantee, and it seems probable that they by no means as closely approximate the condition of a new pavement as do those constructed in Rochester and Buffalo."

In order to show just what these costs are I have prepared a diagram, copy of which is attached. This diagram shows the average cost of maintenance for ten years of all our asphalt streets out of guarantee for the first year, second year, etc., up to and including the tenth year. From this diagram it can be plainly seen that the cost does begin at zero the year that the street comes out of guarantee, and increases uniformly in a straight line until the fourth year out of guarantee is reached. After that the line varies considerably from a straight line.

I trust that you will correct any erroneous impression which your article may have caused, and will be glad to have you publish this diagram, which shows just what the maintenance cost of our pavements of various ages has been.

Yours very truly,

H. H. SCHMIDT,
Chief Engineer, Bureau of Highways.

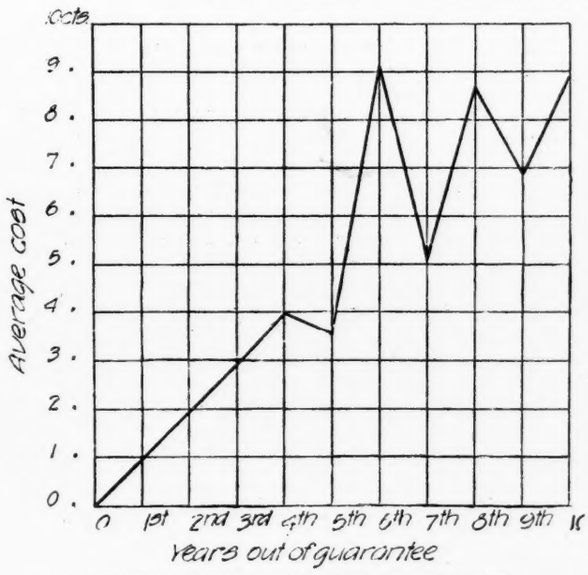


DIAGRAM PREPARED BY BUREAU OF HIGHWAYS

Showing average cost per sq. yd. for maintenance of all asphalt pavements in the Borough of Brooklyn from first to tenth year out of guarantee.

The above communication requires an explanation from us as to how the figures used in the article in our February 1 issue were obtained. The city of Brooklyn issues each year (we believe chiefly for the use of the engineers and inspectors of the Highway Bureau) a book containing a list of all the asphalt paved streets of the city, listed alphabetically by street names, each contract being listed separately, there frequently being several contracts on the same street. This book gives the date of acceptance; date of expiration of guarantee; width, length and square yards of the area included in the contract; the price per square yard, and the average amount per square yard which has been paid each year since 1902 for repairs. These repair costs are in every case the totals for the calendar year. This book was used by the author of the article in question in making the calculations therein recorded; and as these are the official figures we presume they must have been used in preparing the diagram referred to in the above letter.

As our calculations have been checked, and we take it for granted that Mr. Schmidt is sure of the correctness of those made in his office, there must be some other explanation of the considerable difference. Only one possibility occurs to us.

The various pavements are accepted and come under the charge of the city during every month after March, although the majority of them have been accepted between June and the end of the year. The book of records referred to apparently considers as the first year out of guarantee the remainder of the year after the expiration of the guarantee, whatever date that may be. For instance, a contract on Harman street expired December 29, 1903, and came out of guarantee December 29, 1908, and the cost of repair is given for the year 1908 as zero, although but two days of that year remained. Similarly the contract on Havemeyer street expired on the same date and the cost of maintenance for the balance of that year also is given as zero. In the former case the cost of repairs in 1909 was 3.9 cts. and in the latter case in 1909 was 2.1 cts. The only practicable way of treating this appeared to us to be to consider all contracts whose guarantee expired previous to a certain date as being in one class and those expiring after that date in another class; the balance of the year for the first class being considered the first year out of guarantee, and the balance of that year plus the following year being considered the first year out of guarantee for the second class. A calculation made on this basis showed that if September 1 be taken as the point of division between the classes, the average length of all the nominal "years" would be just 12 months; and this was used. In other words, if more than four months remained of the calendar year the fractional year was called the first year out of guarantee.

To give the proofs of all our figures would require an amount of space which we do not feel authorized in devoting to the matter. However, we have taken the first fifty streets, as they occur arranged alphabetically in the list referred to, and have given in the accompanying table the name of the street, the date of acceptance and the average cost per square yard for the first year after expiration of the five-year guarantee. As stated above, where the expiration of the guarantee occurred prior to September 1 the balance of that year was considered the first year out of guarantee. The average length of the fifty "years" is 363.6 days. Contracts on which nothing was spent during the first year are omitted from the list to save space, but are included in calculating the average. It is seen that 30 of the 50 contracts required no repairs. The average amount spent on these 50 contracts during the first year was 3.3 cts. per square yard. As the average of all the figures used in our February 1 article was 3.5 cts., it would appear as though the fifty given herewith are fairly representative of the entire alphabet.

Several instances occur which are not given in this list

DATA FROM RECORDS OF BROOKLYN PAVEMENTS.

Name of street.	*Date of acceptance.*	*Average cost per sq. yd. for first year.*
Albany Ave.	Dec. 3	$0.029
Albany Ave.	Nov. 18	.013
Albany Ave.	Nov. 19	.013
Albemarle Road	Nov. 20	.010
Albemarle Road	Nov. 17	.006
Bedford Ave.	June 12	.005
Bedford Ave.	Oct. 16	.008
Berry St.	Oct. 23	.011
Berry St.	Dec. 20	.179
Boerum St.	July 28	.077
Bushwick Ave.	Nov. 12	.024
" "	Nov. 12	.138
" "	Nov. 6	.002
" "	Nov. 12	.248
" "	Nov. 6	.002
" "	Nov. 12	.490
" "	Nov. 12	.083
Butler St.	Aug. 3	.002
Carroll St.	Oct. 10	.026
Central Ave.	Oct. 3	.262
Total		$1.628

Number of contracts..... 50
Average cost of all contracts..... .033
Average length of "year".....363.6 days.

of large expenditures the first year out of guarantee. For instance, two contracts on Green avenue which expired October 6 required an expenditure of 20.8 cts. per square yard during the balance of that year and the year following. Two contracts on Lee avenue which expired November 12 required an expenditure of 13.7 cts. per square yard for the balance of that year and the year following. A contract on Marcy avenue which expired on December 8 required an expenditure of 31.1 cts. during the rest of that year and the year following. A contract on Nassau avenue which expired October 23 cost 39.4 cts. for maintenance during the balance of that year and the year following. A contract on Pierrepont street cost 23.9 cts. for the first seven months out of guarantee. One in Boerum street cost 7.7 cts. for the first five months out of guarantee. One in St. Johns place cost 3.8 cts. for the first 3½ months out of guarantee. One in Bushwick avenue cost 0.2 ct. during the first 55 days out of guarantee. A contract in Albermarle road cost 0.6 ct. per square yard for the first 44 days out of guarantee.

The above special instances are, of course, selected from a large list, and the majority of the contracts have required no expenditure for repairs during the first year. There were, however, a great many which did require repairing, and some of them very extensive repairing during the first year, as these figures show, and we do not see how it is possible to obtain the figures forming the basis of the diagram presented by Mr. Schmidt except by including in the average as the "first year out of guarantee" those few days or weeks remaining of the calendar year in the case of contracts whose guarantee expired during the last four months in the year, in at least one of which there is seldom any repairing done, no matter how badly it may be needed.

That the pavements are put in such good condition as to surface uniformity that water flowing over them will not even "hesitate" is certainly creditable to the engineer responsible for accepting them, but it does not necessarily imply that such pavements will withstand wear any better than those with less perfect surfaces. The matter of endurance is rather one of preparing the mixture and to some extent of the care with which it is placed and rolled in the street.

We do not wish to be considered as finding fault with the asphalt pavements of Brooklyn. In the case of all the cities used as illustration in our article we simply took the figures as we found them without any preconceived ideas as to what they would show or how they would compare the one set with the other. We made our calculations as carefully, accurately and impartially as possible, and presented the results just as they worked themselves out. The aim was to learn the law controlling maintenance costs in successive years; the comparison of different cities was only incidental.

HEALTH OFFICER QUALIFICATIONS

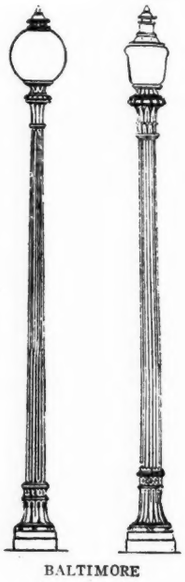
The Graduate School of Applied Science of Havard University has inaugurated a course in sanitary engineering, with George C. Whipple as the professor in charge; this course to teach sanitation as a science of both engineering and biology, in which students can acquire the fundamental knowledge required for the engineering work of designing, building and operating water works and sewage disposal plants, the principles to be applied in street cleaning, the making and interpretation of chemical and bacteriological analyses, etc. Special attention also will be given to preparation for carrying on the work of the sanitary executive commonly known as the health officer. In many towns and cities this position is held by a physician, but it is believed that the requirements of the office are entirely distinct from those of medical practice, and that special training should be had by those who fill such positions. Concerning this Prof. Whipple made the following statement in a recent paper before the Society for the Promotion of Engineering Education:

Harvard University aims to provide instruction for sanitary engineers, for those who desire to become specialists in sanitation and for those who desire to become public health officers. This work is just beginning and the courses first provided and now being given are intended primarily for students of engineering and for those who are candidates for the degree of doctor of public health in the medical school. Later it is planned to broaden the field.

The headquarters of the sanitary engineering course is in Pierce Hall, Cambridge, where, during the past summer, a laboratory was fully equipped for the analysis of water, sewage, air, filter sand, etc., and for research work in water filtration and sewage purification. A part of the latter work will be carried on in the field at various plants scattered through the State, thus putting the student in contact with actual works in operation. The instructing force includes a professor of sanitary engineering and two instructors in the laboratory, one a specialist in bacteriology, the other in sanitary chemistry.

For those who desire to fit themselves as health officers, it is believed that the course in sanitary engineering, supplemented with certain courses in the medical school, the law school and the university, made possible by the free elective system in vogue at Harvard, will furnish an admirable training.

BALTIMORE LAMP POSTS



BALTIMORE LAMP POSTS.

The Municipal Art Commission of Baltimore has adopted a new design for lamp-posts to be used in the city. They differ widely from the designs used throughout the country, which call for heavy cone columns to support a light lamp. Instead of this the commission has taken the flambeau for its model. The new posts are slender and in keeping with the weight they are supposed to support. One of the posts is for tungsten lamps and the other for arcs. No permits for others will be issued in the future.

These posts will probably be used first on Broadway, which from North avenue to Gay street is to be brilliantly lighted, Superintendent of Lighting McCuen proposing to place six arc lights to the block.

Municipal Journal
and Engineer

Published Weekly at
50 Union Square (Fourth Ave. and 17th St.), New York
By Municipal Journal and Engineer, Inc.
Telephone, 2805 Stuyvesant, New York.
Western Office, 1441 Monadnock Block, Chicago

S. W. HUME, President
J. T. MORRIS, Manager. A. PRESCOTT FOLWELL, Secretary
A. PRESCOTT FOLWELL, Editor
F. E. PUFFER, Assistant Editor

SUBSCRIPTION RATES

United States and possessions, Mexico, Cuba...$3.00 per year
All other countries..... 4.00 per year
Entered as second-class matter, January 3, 1906, at the Post Office at New York, N. Y., under the Act of Congress of March 3, 1879.

CHANGE OF ADDRESS

Subscribers are requested to notify us of changes of address, giving both old and new addresses.

Contributions suitable for this paper, either in the form of special articles or of letters discussing municipal matters, are invited and paid for.

Subscribers desiring information concerning municipal matters are requested to call upon MUNICIPAL JOURNAL, which has unusual facilities for furnishing the same, and will do so gladly and without cost.

MARCH 14, 1912.

CONTENTS

Board of Health Warnings

According to reports, one of the smaller Pennsylvania cities has recently furnished an illustration of the importance of heeding warnings of boards of health or other competent advisers as to dangerous conditions of water supplies and the importance of taking immediate steps to remedy them. The Pennsylvania State health commissioner in the first part of August of last year gave warning to the authorities of the city in question that its water supply should receive immediate attention, as there was danger of an epidemic of typhoid fever because of the presence in it of sewage contamination. Six months later an epidemic of typhoid fever assumed such alarming proportions that the State health department took charge of conditions to prevent its further spread.

The fact that health officials cannot state positively that certain conditions will cause typhoid epidemics, or the failure of their warnings to be followed by such epidemics, should not be taken as an excuse for neglecting the warning. The consequences of failure to take necessary precautions may be so serious, the possibility that sooner or later, perhaps in a month or possibly not for years, the consumers of the public water supply will suffer in health and life from the neglect, should lead to an immediate recognition of the importance of such warnings. The action which in most cases is desirable is to install a temporary disinfecting plant at once and employ engineering experts to advise as to permanent methods of removing the danger.

Street Cleaning in Washington

In Washington, D. C., the sprinkling, sweeping and cleaning of streets, avenues and alleys is done by the Street and Alley Cleaning Division of the Engineer Department of the District, of which Major Wm. V. Judson is the head, J. W. Paxton being superintendent of street cleaning. This division also has supervision over the collection and disposal of garbage, ashes, miscellaneous refuse, dead animals and night soil.

Previous to July 1, 1911, when contracts for the work expired, street and alley cleaning were carried on by contract, but since that date the commissioners have performed this work by day's labor. In order to provide for carrying out this work the old street cleaning stable has been remodeled, a new site purchased for an additional one, and new equipment secured. On the new site it is intended to erect a modern, sanitary, fireproof stable, and the old stable also will be remodeled.

Under the contracts all paved streets outside of the hand-swept section were cleaned about three times a week, the area covered amounting to about 2,500,000 sq. yds. The streets in the central portion of the city were cleaned by hand, the area being about 1,877,000 sq. yds. until May 26, when the yardage was increased to 2,005,000. Paved alleys were cleaned about once a week, the total area of these being about 985,160 sq. yds. Unimproved streets were cleaned about once every 10 days, the area of these amounting to about 905,000 sq. yds. During the year 1911 the use of squeegees and flushing machines was begun in the hand-cleaning section of the city.

During the portion of the year from July 1 to Oct. 31 the sweepings from the hand-swept portion of the city were sold under a contract by which 27½ cents per ton was received for them, $811.51 having been received during the fourth months. At the end of that time the contract was annulled by mutual agreement, the District of Columbia finding that the sweepings could be used to a better advantage as fertilizer in connection with the development of the workhouse farm.

A squeegee machine was used during 1910 and three more were purchased at the end of that year, at a cost of $1,200 each, together with two flushing machines at $975 each. The squeegees were operated in a gang consisting of one sprinkler with three or four squeegees. The sprinkler operated some distance ahead of the squeegees to allow the dirt which had become packed and stuck to the pavement to be softened by the absorption of moisture so it could be easily dislodged by the squeegees. Each of these machines averaged 56,259 sq. yds. per day of eight hours. The cost of operating the squeegees was 11.62 cents per 1,000 sq. yds. The squeegees were used largely on sheet asphalt and asphalt block pavements, but on granite block or cobble the two flushing machines were used. The cost of cleaning by these was 31.57 cents per 1,000 sq. yds.

Hand patrol work was continued during 276¾ days, an average of 195 men being employed. These cleaned once an area of 536,897,423 sq. yds., from which were removed about 28,600 cu. yds. of dirt at a cost of 17.53 cents per 1,000 sq. yds., or $3.22 per cubic yard removed. This is .25 cent less than the cost per square yard in 1910, and 1.43 cents less than in 1908.

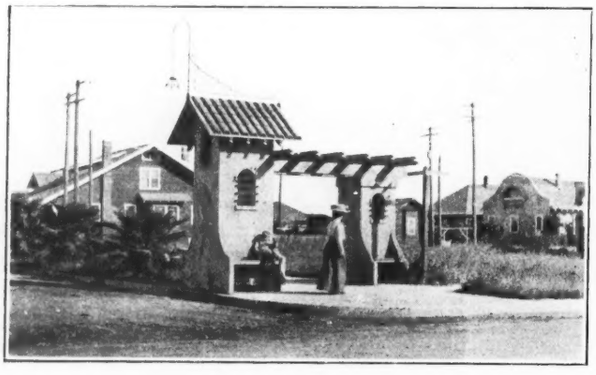
After snow storms of any magnitude horse-drawn sidewalk plows were run over the principal streets, shoving

the snow into the gutters, following which horse-drawn gutter plows were used to open the gutters, followed by men who spread the snow over the street, in sunny places where possible, cleaned cross walks and street-car stopping points, etc. No attempt was made to haul snow and ice from the streets except at points of congested traffic; $12,632.16 was spent in 22 days on snow and ice work.

In cleaning streets and alleys with machine sweepers 42,670 cu. yds. of dirt were removed from 367,242,484 sq. yds. of cleaning one time at a cost of $83,547.67, or 22¾ cents per 1,000 sq. yds., the contract price. For cleaning alleys the contract price was 40 cents per 1,000 sq. yds., and 8,455 cu. yds. of dirt were removed from 38,396,138 sq. yds. cleaned once. This gives an average of $1.96. per cubic yard of dirt removed by machine and $1.82 for each cubic yard removed from the public alleys. By hand patrol work 53 1-3 cu. yds. of dirt were removed for each 1,000,000 sq. yds. of cleaning, 116 cu. yds. per 1,000,000 by machine sweeping, 220 cu. yds. from public alleys and 339 from unimproved streets.

ODD ORNAMENTS FOR STREET CORNERS

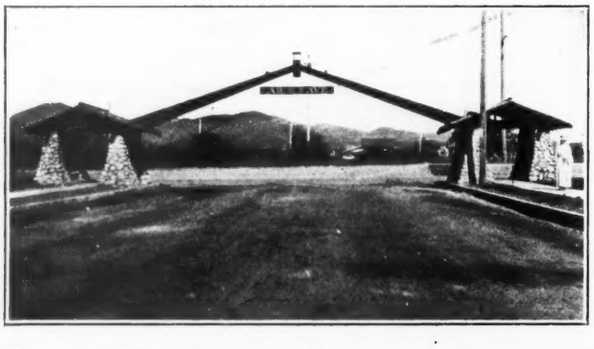
THE beautifying of street corners by ornamental posts of stone or concrete has developed to such an extent in the outlying sections of Los Angeles that practically every newly opened tract has its distinctive landmarks. Sometimes they are really useful, as in the case of the Mission



BENCH AND CORNER ORNAMENT, MISSION STYLE.

style resting place, furnished with benches and a shelter from sun or rain, a convenient place for the suburban resident to wait for his car. This one is in an architectural style which conforms to many of the homes in that section.

Another one is at the entrance to Arden avenue, and consists of two shelters built of large cobblestones and cement.



SHELTERS WITH DRINKING FOUNTAINS AND SUPPORTS FOR LIGHT AND STREET SIGNS.

These resting places are furnished with a rustic fountain and drinking cups, as well as benches for the tired commuter. They support a rustic arch that spans the thoroughfare and carries an electric light and a large street sign—a very useful idea for the suburbs.

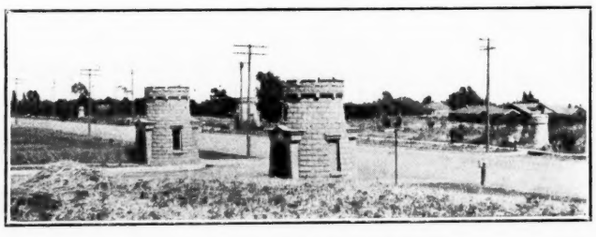
On the "King's Highway," the old road between the California missions, mission bells on artistic corner posts are placed at street corners in the cities to mark its route.

Still other corner ornaments are merely odd, such as the cobblestone column, which re-

COBBLESTONE COLUMN.

MISSION BELL ON KING'S HIGHWAY.

minds one of the structures built of oranges seen at agricultural exhibits; while the "castles" of concrete blocks, which make the sparsely settled tract look like a giant's chessboard, are not only grotesque, but positively detrimental, for it will be noticed that these "castles" span the sidewalk, and a better lurking place for highwaymen than their dark interiors could hardly be devised.



CONCRETE CASTLES AT STREET CORNERS.

These diverse attempts at decoration suggest very strongly the need of a commission made up of artists and architects to pass upon all such designs before permitting private capital to erect permanent "ornaments" upon the street corners.

DAMAGE FROM WATER IN FIRES

The Chief of the New York Fire Department, John Kenlon, in an order issued March 6, has recognized the damage which frequently, if not generally, results to buildings and contents from the water used in extinguishing fires. In this order Chief Kenlon gives instructions as to the nozzles to use under different conditions, directing that "nozzles should never be larger than one-half the diameter of the hose." Instructions are given for varying the diameter of the nozzle with the length of hose, also. For instance, with 3½-inch hose a 1¾-inch nozzle would be used for a short stretch of hose, a 1½-inch for a medium stretch and a 1⅜-inch nozzle for a very long stretch. For 3-inch hose nozzles should be 1½, 1⅜ and 1¼-inch respectively, and for 2½-inch hose, a 1¼-inch nozzle should be used for short stretches and a 1⅛-inch nozzle for long ones.

For small fires, particularly in tenement districts, ¾-inch or smaller tips are to be used. He directs 1½-inch controlling nozzles are not to be used for inside work, but may be used on 3-inch hose for outside work, where a controlling nozzle would be more advantageous than an open one. Company commanders should use sound judgment in the use of water and shut off or reduce the stream when conditions warrant it, with the aim of extinguishing fires with the least possible damage by water.

NEWS OF THE MUNICIPALITIES

Current Subjects of General Interest, Under Consideration by City Councils and Department Heads—Streets, Water Works, Lighting and Sanitary Matters—Fire and Police Items—Government and Finance

ROADS AND PAVEMENTS

Wide Tires to Protect Country Roads

Bristol, Tenn.—The necessity for the protection of the pikes of Sullivan County from damage by narrow-tired wagons is attracting the attention of members of the county court. One of the pikes has been very seriously damaged by wagons hauling heavy loads of green oak lumber while the macadam was thawing out from a recent freeze. A member of the county court stated that $1,000 would not repair the damage done to the road. He said the county court should require wagons to use broad tires where over a stipulated weight was hauled. He believes this is the only way to protect the roads. The county will soon have expended $500,000 in the construction of a system of pike roads, and the county court is beginning to turn its attention to the matter of keeping them up.

Street Contractors Must Cover Trenches

San Francisco, Cal.—The street committee of the Supervisors has adopted a resolution calling on the Board of Public Works to provide in specifications on bids for street work that all trenches and ditches opened in street roadways shall be covered at night with planking. This precaution was suggested by an accident recently on Valencia street. The expense of covering an entire trench with planks is expected to encourage prompt work on the part of contractors in filling up the trenches and to discourage the practice of leaving long stretches of street roadway open indefinitely.

Improving Midlothian Streets

Midlothian, Tex.—Commissioner Ed Lowe, working with the City Council, has done a great deal of street and road grading and graveling during the last thirty days. Streets and roads have been graded and bedded with a heavy layer of white rock, then graveled with a good grade of gravel. The business section of the city has concrete guttering on the main streets, and sidewalks and crossings of cement. Over fifty wagons and teams are hauling white rock and gravel, and all roads leading into Midlothian will be completed within ten days.

Miles of Concrete for Kennewick

Kennewick, Wash.—Carloads of gravel and cement are piled along several streets awaiting the removal of old walks and the completion of the grading, preparatory to laying approximately four miles of new concrete walks. The big trunk line sewer is nearing completion and soon the city mains will be placed in position.

City to Establish District Grades

Oak Park, Cal.—The City Engineer's office has given out the information that hereafter all property owners in the annexed portion of the city will be able to obtain an official grade whenever they need one for the purpose of doing street work or making permanent sidewalk improvements. City Engineer Randle said that since the Board of Trustees authorized him to employ extra men for the purpose of establishing grades in the annexed district, he would be able upon three days' notice, to establish a grade. This information is welcomed by a large number of property owners who wish to make improvements in front of their holdings, but were reluctant to do so until an official grade could be obtained from the city. The city engineer was, heretofore, unable to give service in the annexed district because no money had been appropriated by the trustees for the purpose. It is likely that the property owners in some streets will now compel those who have refused to lay sidewalks to do so, since there is a city ordinance governing this matter. Heretofore, no appeal could be made to the trustees with any effect, because the reluctant property owners fell back on the plea that they could obtain no official grade from the city.

Extensive Paving Construction in Dallas

Dallas, Tex.—Approximately thirteen miles of street paving is being laid in Dallas under contracts which are at this time being executed. The materials being used are bitulithic, creosoted pine blocks and asphalt macadam.

New Highways Would Cost City at Least $81,000,000

Boston, Mass.—Francis R. Bangs, representing the Boston Real Estate Exchange, had a conference with the Street Commissioners in relation to the construction, as proposed by Mayor Fitzgerald, of a highway to connect directly the North and South stations; also the proposed extension of Hamilton place and the widening of Avery street. The total valuation of the property that could be taken for these improvements, including the new highway from Hanover street to Boylston street, through City Hall avenue, would run up to $81,000,000. Of this the assessed valuation of the property to be taken in connection with the new highway between the North and South stations is $20,000,000; the assessed valuation of property to be taken in connection with the new street connecting Hanover with Boylston street is $49,000,000; Avery street widening, $5,000,000; Hamilton place extension, $7,000,000.

San Pedro Makes Progress in Street Improvement

Los Angeles Harbor, San Pedro, Cal.—The grading and paving of Seventh street, one of the most striking bits of public improvements made here in recent years, has been completed. This forms a connecting link with the residence and business sections on an easy grade, the only street of its kind in this district thus far. The total cost of the improvement has been about $25,000, 70,840 square feet being covered with asphalt, and will be followed shortly by cement sidewalks the full length of the work.

Commence Work on Macadam County Roads

Sweetwater, Tex.—The work of macadamizing the Nolan County roads has begun. The grading has been going on since August 1, and this part of the work is about completed. All the principal roads leading into the city of Sweetwater will be graded and put in first-class shape, and where the ground is soft and sandy crushed rock will be used. All the bridges are of reinforced concrete. This is the work as a result of the $100,000 bond issue in this precinct. This is being applied on about thirty-six miles of the road.

Traffic Over Bridge Limited

Washington, D. C.—The Calvert street bridge has been declared dangerous by the Commissioners and traffic over it has been limited. Excessive vibration had been caused by traffic pedestrians on the walks, which are carried by overhanging brackets. On the north side the railings had been moved in five feet, as shown in the illustration, and plans had been made for moving in the railing on the other side when the court issued a restraining order following the filing of a suit by the traction company, who contended that the narrowing of the bridge was illegal. Pedestrians are now allowed to cross in the roadway at their own risk.

Courtesy Washington *Star*.

CALVERT STREET BRIDGE, MADE NARROW TO AVOID VIBRATION.

SEWERAGE AND SANITATION

Adopt Individual Drinking Cups

Sherman, Tex.—Whitesboro has adopted the individual drinking cups and sanitary fountain in the public school of that place. Superintendent George W. Acton has made many improvements in the school the past few months.

Million Asked to Build Sewers

Boston, Mass.—More than $1,000,000 is desired this year by the commissioner of public works for building new sewers and for the reconstruction of old ones in various sections of the city. The commissioner has sent a letter to the mayor's office asking for $874,000, in addition to the regular appropriation.

Trouble from Roots of Poplar Trees

Emsworth, Pa.—More than 1,000 poplar trees were felled this week in this Pittsburgh suburb. The fast-growing poplars disrupted the sewerage system and brick sidewalks by their strong roots and the borough council was compelled to order their destruction. Shade trees of other varieties will be substituted at the expense of the borough.

City Has Epidemic of Typhoid

Two Harbors, Minn.—The last council was devoted mainly to a discussion of the typhoid epidemic from which the city is suffering, forty cases having been reported in the last ten days. Dr. M. K. Knauff, chairman of the local board of health, spoke at length, giving his views of the matter. In a case like the local one the cause may be found in either the water supply, the milk supply or the danger of contact. It was Dr. Knauff's opinion that the last two causes could be eliminated and that the cause could be attributed to the water supply. The sewerage of the city is emptied into Lake Superior at two places, one outlet being in Agate bay south of town, while the other is at Burlington bay, east of town. The intake pipe is situated almost exactly between these points. According to Dr. Knauff the cold weather has formed ideal conditions for the perpetuation of the typhoid germs; also when the new council took office one of the first acts was to change the method of allowing the sewerage to filter into Burlington bay. Formerly the sewerage was allowed to flow through the septic tank and then seeped through the gravel bank at Burlington bay into the lake. This was changed and a pipe was put in so that the sewerage could run directly into the lake from the septic tank. Now there is a large sewerage bed in Burlington bay. The bay has been totally covered by ice for the last month. There is a theory that this is the cause of the breeding of the germs, the confinement of the germs underneath the ice and the absence of sunlight, whose power to destroy germs is well known. Dr. Knauff recommended that the well at the pumping station be cleaned out immediately and that the intake pipe be examined for leaks. He also desired to have the flow of sewerage into Burlington bay stopped, since the currents of the lake flow from that direction directly to the intake pipe. He made a general recommendation by stating that the only solution lies in filtering the water.

WATER SUPPLY

Water Famine Feared

Vallejo, Cal.—Plans to prevent a water famine during the coming summer have been formulated by the city officials. The mayor, commissioners and city engineer found on their inspection of Vallejo's two lakes in Green Valley that there was approximately 465,000,000 gallons of water in the lakes.

Worst Winter in the History of Water Works Department

Rochester, N. Y.—The present winter has been the worst one in the history of the Water Warks Department, according to Superintendent Beekman C. Little, who said that since the cold weather began 1,500 meters have been frozen, and 500 of these are now in the shops being repaired. In addition, 135 frozen services were reported, and there were 50 frozen hydrant branches and even a number of frozen mains in the outlying districts. The Water Works Department has seven gangs of men at work testing hydrants. Frost has been found 5 feet down in the ground. This is unusual. The frost line, as a rule, is about 3 feet.

Paris Scheme for Rhone Water Opposed

Paris, France.—The proposal made by the Paris Municipal Council to draw the water supply of the French capital from the Rhone has met with considerable opposition not only from Lyons but Avignon also. The question has been investigated by the Society of Agriculture and Horticulture of Vaucluse and a verdict against the scheme has been pronounced. M. Vallayer, the mayor of Avignon, has, in company with the mayor of Lyons, agreed to oppose the measure with all the means at their disposal.

Water Works Saves Over $500 Per Month

Knoxville, Tenn.—Expenses in the office of the Knoxville water plant have been reduced more than $500 during the years 1910 and 1911. This is one instance which proves that by municipal ownership of a plant expenses can be reduced. Figures showing the reduction were taken from the pay rolls of the plant. This pay roll does not include the commissioner's salary, which is paid out of the general fund of the city. He has other city properties to care for. Only those who are directly connected with the office of the water plant are included in this pay roll. These salaries are paid out of money collected for water used, and not from funds received as taxes. Figures showing the reduction in expenses follow: Total monthly pay roll for the year 1910-1911, $1,800.33. Total monthly pay roll for the year 1911-1912, $1,263. Monthly saving or reduction, $537.33.

Breaking of Steel Main Causes Great Water Waste

Schenectady, N. Y.—Active work of repairing the break in the 36-inch water main on the Myers farm at Rotterdam is at a standstill awaiting the $600 worth of steel piling ordered in Buffalo to stop the landslides. Superintendent of the Water Bureau Bentley went to the scene of the break and found the water coming out under the sand bank at about the same rate as when first discovered. This is said to be 30 gallons a minute, which means a loss of 345,600 gallons since the break occurred a week ago. A pile driver belonging to Brown & Lowe, the contractors, has been sent to the scene to be ready for the piling when it arrives.

Gets 3,000,000 Gallons Daily from One Well

Lubbock, Tex.—Lubbock now has without doubt the greatest well that has ever been developed on the Plains. This is the city water works well, which was given a thorough tryout and proved a success in every respect. This well is supplied with an air compresser and is the only well so fitted up in this section of the country. The capacity of this well exceeds 2,000 gallons per minute, or nearly 3,000,000 gallons for every twenty-four hours it is run. Owing to the great interest in irrigation in this section the result of every new type of pump and power installed is watched with a great deal of interest, and such has especially been the case with the Lubbock city well.

Trial of High Pressure Main Results in Damage

Baltimore, Md.—With a roar of a small-sized waterspout, a stream of water backed by a pressure of 150 pounds gushed from the high-pressure pipe line connection at Holliday and Fayette streets, tearing a hole 5 feet in depth and 10 feet in length under the surface of the street. The accident was the result of the introduction for the first time of pressure in the pipe line of Baltimore's new high-pressure fire-fighting system, and but for the prompt action of Engineer Daniel B. Banks in turning off the water at the nearest cut-off not only would the cellar of the city hall have been flooded, but there was a danger that the entire street bed at that point might have caved in. After an inspection of the wash-out by City Engineer McCay, a force of men was put at work bracing the street and car tracks. With steam in one of the three pumps which will operate the high-pressure system, and a pressure of 150 pounds in the pipes, the new system, although not ready to be officially turned over to the Fire Department, is ready to cope with flames. With one pump working the pressure in each of the hydrant connections can be generated to equal the pressure of three ordinary fire engines. The remaining pumps will not be put into operation until the quarters for the crew are completed at the South Street Pumping Station, from where the system will be operated. It is expected that the entire system will be in operation in a week or more.

Mayor Finds City Water Supply O. K.

Jersey City, N. J.—Mayor H. Otto Wittpenn has made an inspection of the sterilization plant at the Boonton dam of the Jersey City Water Works, in which place the water is treated with chloride of lime to kill bacteria and render it pure. Dr. George E. McLaughlin, bacteriologist of the Street and Water Board, accompanied the Mayor and explained the working of the system by which Jersey City is able to secure a water supply which the Court of Chancery determined is as pure as any in the country. Chemist Guy Britton, who is in charge of the plant and makes the daily bacteriological tests under the direction of Dr. McLaughlin, gave the Mayor a practical demonstration of his work. Mayor Wittpenn left the sterilization plant, thoroughly satisfied, he said, that the treatment of the water was in capable hands and that according to the tests Jersey City is receiving water that is pure and wholesome.

Rome Has Good Water

Rome, N. Y.—Henry N. Ogden, special assistant engineer of the State Health Department, came to Rome last July and made a thorough inspection of the Fish Creek water and the watershed, which is Rome's water supply, and he was much pleased with what he found. He has presented his report, twenty typewritten pages, to the State Commissioner of Health. Mr. Ogden says that the number of bacteria present is generally low, and that the water in general is shown by analysis to be in good sanitary condition.

Report of Ilion Water Works System

Ilion, N. Y.—Ilion has a system of water works and a Board of Water Commissioners, of whom it feels proud, and their report for the year shows the earnings for the year of over $10,000, after deducting interest and all other operating expenses, a good argument for the municipal ownership of such systems. The report shows receipts for the year of $22,341.66, not including cash on hand from the preceding year of $4,211.57. Of the receipts, $19,995.96 were from water rents. The disbursements were $20,922.42, of which $3,000 was on bond account, $6,140 interest on outstanding bonds, and $3,401.50 in connection with the house at No. 1 reservoir grounds. The balance on hand and in the bank is $5,331.81.

City Filter Plant Pronounced a Success

Fort Worth, Tex.—Announcement is made from the office of the Water Works Department that artesian water will soon be pumped into the mains. The month's test of the filter plant is concluded and has shown itself, it is said, a complete success from a filtration standpoint, the water being bacteriologically entirely pure. It has also resulted in practically halving the pumping expense. The question now up is whether the people prefer to pay more for artesian water or take filtered river water. How long the artesian water will be sent through the mains is a matter that has not been decided upon. Very likely no definite policy will be announced until after the full reports are available on comparative costs, and time has been given to ascertain what the consumers want. During the month the Powell plant machinery has been thoroughly repaired, and all plants are reported ready for operation.

City Water Sales Are Large

Fort Worth, Tex.—Water for Katy engines over the parts of the system near Fort Worth is being supplied by the Fort Worth city water works. The water trains are supplied from the unfiltered river water. Some of the trains of tank cars carrying water from here number 20 cars. They are used to take water to other points where the engines are supplied, in addition to the supplies taken by the engines at Fort Worth. February's water records for the dual plant, by which this water for industrial purposes and fire is pumped, show that the Katy has obtained nearly 13,000,000 gallons of water for the month, the exact meter figures being 12,855,272. Of this amount 12,749,797 gallons were pumped through one meter at the south yards, where the water trains are loaded. The water is being sold at 10 cents a thousand gallons, and the Katy's water bill for the month, exclusive of the artesian water, will be $1,285.52. The Denver road is the next largest purchaser, its meter showing 1,143,771 gallons.

STREET LIGHTING AND POWER

Objects to Illumination of Highways by the State

Albany, N. Y.—Senator George H. Cobb, of Watertown, opposed the policy of the State going into the business of lighting highways at a recent session of the Senate. Senator Loren H. White has a bill directing that the State Highway Commission shall erect poles and string wires for lighting a section of improved State road as an experiment. The bill came up for advancement to third reading. "I hope that the State will not undertake to light the sky, the woods and highways of the State until we get the improved highways that we need," said Senator Cobb in objecting to unanimous action. He particularly objected to the feature of the bill which makes it mandatory for the Highway Commission to light a road. After some discussion Senator White consented to amendments which will leave the trial to the discretion of the commission, and with this understanding it was advanced.

Electricity for Macedon Furnished from Rochester

Macedon, N. Y.—As illustrative of the extension of the radius of activity of the Rochester Railway & Light Company comes the announcement that the village of Macedon has been lighted by electricity for the first time, with electricity furnishd from Rochester. The Rochester Railway & Light Company carried the current over the line run along the Barge Canal to the Kerbough contract, which line was erected last spring. From that point, an extension of seven miles was built to Macedon last fall, and at Macedon the local company's wires were hitched to those of the Macedon Lighting Co,, where by a system of switches and transformers the current was made available for use in lighting the village. It is the purpose, also, to use the current for power in Macedon. The Macedon company purchases the electricity from the Rochester company, using its own plant in the village.

Gathering Data on Municipal Ownership

Red Bluff, Cal.—The inquiry into the feasibility of the municipality owning its waterworks and electric light plant is being prosecuted by City Engineer W. F. Luning, who is in San Francisco gathering data on the subject. He will visit several of the towns that have municipal plants. The City Trustees instructed him to inquire into the matter, as a result of a petition presented to the board asking for an election on the subject.

Will Install One Thousand Gas Lamps

Elizabeth, N. J.—Charles C. Denton, of the Elizabethtown Gas Light Company, who is in charge of the installation of the new inverted Welsbach portico lights throughout the city, which were authorized by City Council late last year upon the recommendation of the committee on street lighting, reports that the work has been held up by the severe winter weather of the last two months. As soon as clear weather sets in, however, he says that there will be little delay in completing the change. In all there are about 1,000 lights to be installed, which will be distributed in the different sections of the city, 500 going below Spring street and as many in the upper portion of the city. Practically none will be placed in the business section, as those streets are lighted by electric arc lights. The replacing of the present gas lamps involves considerable extra work, a large number of the existing standpipes having to be changed for larger ones. In many cases, also, the location of the present lamp posts has to be changed in order to clear trees which obstruct them and to effect a better lighting of the pavement than is now the case. The cost of maintenance of the new inverted lights will be about $3,000 more per annum than the upkeep of the old lights, though the initial cost of installation is comparatively light. It is claimed for the new lights that they will give a much better illumination and at the same time be more ornamental.

New Electric Light Is Absolutely Cold

Paris, France.—Dr. Dussaud, a French physician, has produced an electric light which is absolutely cold. The new light is perfectly harmless and could be employed without danger in mines and powder magazines. The absence of all danger in the new light has led the Minister of Public Instruction to authorize its use in cinematograph installations and public schools.

FIRE AND POLICE

Signal System Damaged

Roselle, N. J.—During a recent high wind an electric light wire was broken and came in contact with the new police signal system just completed and ready to be connected with the switchboard at the Borough Hall building, and burned out one of the cables. Considerable work will have to be done before the service can be placed in working order, probably requiring two or three weeks more of labor.

Test New System of Red Light Signals

Cleveland, O.—Red light signals scattered in every part of the city will flash calls to the police on their beats when they are needed on emergency work, if an electric signal device now being studied by Public Safety Director Stage is adopted by the city. Under present conditions the police if needed for special or emergency work can be notified only when they call the stations from their boxes at intervals of an hour. Under the red light plan the desk man will press a button and red lights located at conspicuous corners of the beat of the policeman who is wanted will flash. It is argued that by this device a large number of men can be assembled in short order at any portion of the city. Director Stage is planning to test the new system at the depots and boat landings. If it proves successful it may be extended to the entire city. The system is in use in Camden, N. J.

Test Fire System at Collingswood

Collingswood, N. J.—The newly-installed police and fire alarm system of Collingswood has just been given a successful test. The system is connected with the Keystone Telephone Company's lines and all calls from the boxes go directly to the exchange operator. A dozen boxes have been installed in various places throughout the town and the officers in going about on their beats are required to report at each box. The system is nearly complete and a great thing for the town. The bell in the boxes can be heard from one station to the next. The system cost very little, the installation price of each call box being but about $22.

Chemical Engine Is Given a Test

Central Valley, N. Y.—A test was made of the efficiency of the new chemical fire extinguishing engine that George A. Wies recently presented to the village. A large bonfire was built in the rear of the store of C. T. Ford and Chief Gildersleeve and a few members of the company used the extinguisher on it with rapid and telling effect.

Fire Marshal Issues Warning About Pulling Alarms

Grand Rapids, Mich.—Declaring that the city fire alarm circuits are liable to trouble, as the result of high power electricity used in other lines, Marshal Lemoin has issued a warning to residents of Grand Rapids. "Every time a man pulls a fire box he should supplement the signal with an immediate telephone message to fire headquarters," he said. "The reason for this is twofold. First, there is the possibility that for some reason the alarm box may not work. To the casual observer it might look as if it were in good order, while, in fact, it may not be registering at the station at all, or sending in a poor alarm. We have had but little trouble with the alarm system for the last two years because of the efficient work done in keeping it in repair. But the currents of electricity from other ducts near our wires are becoming stronger every day, and we never can tell when a box may fail to work. Even the city water pipes are charged with electricity. The companies using electric power are taking proper care of their conduits, and we get the current by induction. A second reason for a telephone alarm is that when a box is pulled the firemen obtain only a general idea of the location of the blaze. It might be anywhere in three or four blocks. They have to hunt or trust to chance directions and information after they reach the box. Another thing to which the average person pays but little attention is the location of fire alarm boxes. Every person in the city should know the fire box nearest his home, and know how to go about it to turn in an alarm."

Mayor Advocates Keyless Fire Alarm Boxes

Lynn, Mass.—Keyless fire alarm signal boxes, with red lights to disclose their location during the darkness, so that in an emergency they can be speedily discovered, will be advocated by Mayor Connery this year when he has his conference with City Electrician B. Frank Moody on the annual extension of the police and fire signal systems. Keyless fire alarm boxes have been discussed in Lynn for a number of years, but nothing has ever been done to supplant the old-fashioned boxes, which, it is understood, City Electrician Moody has often said have become antiquated. None of the signal boxes in Lynn is of the keyless type, although the old style boxes have been gradually disappearing in nearly all of the Massachusetts cities. In Brockton practically only keyless signal boxes are used. Lowell, Fall River, New Bedford, Fitchburg and many other cities began to experiment with the new kind nearly twenty years ago. Mayor Connery says the idea of a red light over the fire signal boxes appeals very strongly to him. He has learned that in Worcester all of the signal boxes within a mile radius of City Hall are located on lampposts with a big gas flame surrounded by glass painted red. Chief Harris is known to favor the keyless signal boxes.

Police Report for One Year

Fort Worth, Tex.—Statistics from the central police station show that during the past year the amount of fines assessed was $35,398.55 accruing from 8,900 arrests. The meals given prisoners cost the city $6,366.21, and salaries of members of the department amounted to $77,692.32. There were 6,797 cases in the corporation court, with 3,412 convictions. Thirty-eight fugitives from justice were arrested and 74 prisoners were held for officers from other towns. The number of dogs killed was 2,312 and the number of dog tags sold 3,513. The number of horses impounded was 225, cattle 194, and mules 19. The automobile patrol, which has been in use since July, has made 2,625 trips, traveling 5,312 miles.

City Well Protected Against Possible Fire

Snohomish, Wash.—Snohomish now has protection against fire such as few cities of the State can boast, a gravity water system pouring into the reservoir 800,000 cubic feet of water daily, which by opening the gates will supply 1,000,000 gallons and afford a pressure at the city limits of 145 pounds per square inch, and in the business section 172 pounds. The gates to the pipe line have been thrown open their full width for the first time and the pipe line stood the strain.

Police Helmets To Be Discarded

Birmingham, Ala.—On April 15 there will not be a single policeman's helmet to be seen on the streets of Birmingham. On that day the familiar helmet will be relegated to the ranks of the past. Chief Bodeker and Judge Lane have been conferring over the subject for the past few days and have decided to make Birmingham the first city in the South to take up the new order of uniforms for policemen. A new cap has been purchased for the police and it is something decidedly new in that line. It has a light drab cravannette silk top, with a black band an inch and a half wide at the base; a patent leather sloping visor and black patent leather band across the front. On the caps of the superior officers will be done in gold braid the word "Chief," "Captain" or "Sergeant" as the case requires. On the front of the caps worn by the patrolmen will be the wreath containing the number of his badge, as is the custom now. When the caps are instituted the wardens at the city jail will also be required to don uniform, something which they have never before been required to do. The patrol chauffeurs will also wear full uniforms. On the front of their caps, in gold braid, will be the words "Warden" or "Patrol Chauffeur" as the case may be. The caps used during the summer are in vogue in most northern cities, but Birmingham is the first city in the South to adopt the new order of things. Birmingham was possibly the first city in the United States which abolished the policeman's billy. There will be no change made in the summer uniform except the substitution of the cap for the helmet. The change is in line with a general tendency noticeable throughout the country to give policemen more comfortable uniforms.

AUTO APPARATUS NOTES

Auto Pumping Engine Works at Cotton Fire Where Steamer Could Not—Chief Sloan Says Motor Pump Is Equal to Steam Engine—Maintenance Figures—Apparatus Received.

Marion, Ind.—On account of a recent heavy fall of snow it was found that for the first time in the history of the fire department the horses which have drawn the apparatus for so many years were unable to pull the wagons through the heavy snow. Auto trucks were hired from three local garages and properly equipped with hose, etc., in case of an emergency call. The automobile trucks will be retained by the department until the snow is demoved from the streets, when the horse-drawn apparatus will again be used.

Hattiesburg, Miss.—Chief Potter, of the local fire department, has returned from Savannah, Ga., where he has been in attendance at a demonstration of automobile fire apparatus. It is stated that an effort will be made to have Hattiesburg adopt this new mode of fire fighting.

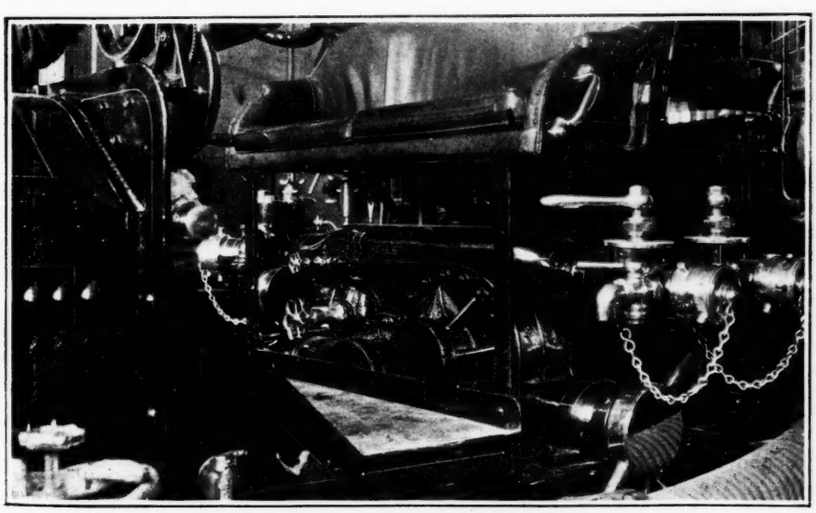
San Francisco, Cal.—An auto-drive chemical engine, the first to be acquired by the city, has been installed in the quarters of engine company No. 2, in Bush street, between Kearny street and Grant avenue. It is expected to prove invaluable as a first aid, as it easily takes the heavy grades in the district covered by engine No. 2, and will hold ordinary fires in check until the arrival of the horse-drawn apparatus. It is the intention of the fire commissioners to install a similar engine in the Mission and a third one in Richmond district at an early date.

Kittanning, Pa.—Kittanning is another of the towns which have been converted to the auto hose wagon for the fire department, two of the volunteer companies of the town having just placed orders for apparatus of the motor variety. At a meeting of hose company No. 3 it was decided to order a combination hose and ladder truck. The auto truck will be delivered about April 1 and will make a most efficient modern addition to their equipment. It will be a 40-horsepower machine to cost about $2,500. A demonstrator will come with the truck and instruct several of the firemen in its use. Hose company No. 1 through a local firm, Moorhead & Gates, has ordered a two-ton auto truck with a 50-horsepower engine. It will be equipped with two chemical tanks and will carry hose and ladders. It will cost about $3,200 and is to be delivered the middle of April.

Newark, N. J.—The new automobile fire engine that is to be placed in the North End has been given an official test in Weequahic Park. Members of the Fire Board, aldermen and several other city officials, with chiefs of several outside fire departments, witnessed the tryout. Various "stunts" were gone through. Gauges and measuring devices were employed to determine the pressure per square inch, and the number of gallons per minute delivered at the nozzle. Hose lines, varying in length from 50 to 1,000 feet, were employed. The pressure and water delivery varied with the length of the hose and the size of nozzle, but it was shown that the pressure could be increased from 40 pounds to 120 pounds and the delivery from 280 to 750 gallons a minute. Chief Sloan said the test proved that a motor engine was equal to the horse-drawn steamers.

Galveston, Tex.—The auto fire engine of the Galveston fire department, which had been called the hoodoo and the Jonah by many because it had played in such miserable luck, breaking down and going to the shop and rarely ever getting in action at a fire, has redeemed itself. At least its performance at the cotton fire in the steamship Mercedes de Larrinaga at pier 36 was right up to the standard, and Fire Chief Gernand is very proud of the machine. It got to the fire without breaking down and it just so happened that it was just the apparatus that was needed. Owing to the large amount of cotton stores on the wharves it was found that the coal fire steamers could not be worked on the waterfront, as these engines emit sparks while in operation. It was absolutely necessary to have an engine stream because the city's water pumping station was out of commission for repairs. So the auto engine was permitted on the wharf and for ten hours did splendid work. During all this time it maintained an average of 150 pounds of water pressure and incidentally it pumped a powerful stream. With 1⅛-inch nozzle three firemen were able to hold the line. At one time it was desired to move the hose line from one part of the ship to another and the task was a test for five men to switch the nozzle's position. During the ten hours' steady operation the auto engine consumed 25 gallons of gasoline, costing $3.25, and lubricating oil costing about $1.25, or a total operation cost of $4.50. One of the regular fire steamers would have consumed a ton of coal in ten hours' operation, and this costs $10 a ton exclusive of the lubricating oil. A fireman would have been kept fairly busy shoveling coal and the engine would have to be shut down occasionally and cleaned out, especially when pumping salt water.

Elizabeth, N. J.—V. A. Ryan, of the Sterling Garage, is in receipt of an announcement to the effect that the Olds Motor Works, of Lansing, Mich., will add to their line fire-fighting and other equipment for municipal service. This announcement has just been made by W. G. Mead, vice-president and general manager of this company. The Oldsmobile chassis for several seasons past has been used for this work and for three years this company has carried on extensive experiments with fire-fighting apparatus. Mr. Mead states that there is no longer any question of the practicability of motor-driven fire apparatus, for only a short time ago the Oldsmobile fire fighters now in use in the city of Lansing had one of the most severe tests ever given to apparatus of this kind. Two pumping engines are in use in Lansing, one a 60-horsepower and the other a 90-horsepower. At the burning of Lansing's largest hotel, the Downey House, a short time ago, the smaller of these engines, which, by the way, has seen three years of service, pumped steadily for 10 hours and 45 minutes, while the large one worked without stop for 13½ hours. The two engines consumed a total of 96 gallons of gasoline, throwing an average of 1,350 gallons of water per minute. As the hydrant pressure only averages from 15 to 20 pounds, it can be seen that the engines were working to their fullest capacity. Mr. Mead says that for the present the combination chemical and hose wagons, together with police patrols and ambulances, will represent the major part of the output, and that the company is now prepared to go ahead and accept orders for same.



DETAIL OF LA FRANCE AUTO PUMPING ENGINE.

Matteawan, N. Y.—Matteawan's Beacon Engine Company is rejoicing over the arrival of its new six-cylinder automobile engine. The engine was built at the Webb Automobile Fire Apparatus Works in St. Louis. It is of the six-cylinder type and is rated at 45 miles an hour. There is a pumping equipment attached. It is rated at a capacity of 500 gallons a minute. There are two ladders in holders on either side of the truck. One is in two 6-foot sections and the other is a 20-foot ladder, also in two sections. The body has a carrying capacity of 1,000 feet of hose and eight men. From the pump two streams can be secured at high pressure. On the dash of the machine there is a locomotive bell, of rich tone, for alarm purpose. It is connected with the driving wheel and is operated by a belt. Directly back of the air chamber of the pump there is a metal basket for the purpose of carrying a battery of chemical tanks. On the rear step there are two hand chemical tanks, in holders, and other equipment. The color of the machine is maroon and trimmings are of nickel. The fixtures on the machine correspond with the trimmings. On the hood of the engine, on either side, there are the initials "M. F. D." On either side of the seat "Beacon Engine Co., No. 1," is lettered on the body.

Providence, R. I.—In the annual report of the Providence Board of Fire Commissioners, the purchase of motor-driven apparatus for the department in the future is strongly recommended, the board indorsing highly the work done by the new automobiles bought during the past year. The commissioners discuss at some length this phase of the work of the department and urge economy, speed in reaching fires and the saving to property as arguments against the purchase of more horse-drawn apparatus. A statistical table is included in the report, showing that the cost of maintaining the present equipment, which includes 119 horses, has been enormous during the past ten years.

Indianapolis, Ind.—The city of Indianapolis has complied with the requirements in the way of men and equipment for the fire department demanded by the fire insurance interests in order that the city may obtain a reduction in fire insurance rates. Requirements that have been met along this line have included the addition of forty-two men, the erection of new fire engine houses at South and New Jersey streets and at Kentucky avenue and Maryland street, the appointment of an additional Gamewell fire alarm telegraph operator and the purchase of two horse-drawn engines, a motor ladder truck, two motor squad wagons and a motor combination hose and chemical wagon. In addition to the requirements the city is building a new fire engine house at Thirty-eighth and Ruckle streets, at which will be installed a new motor combination pump and hose wagon with six men. The city will also buy a new combination hose and chemical wagon for engine house No. 5, in West Fifteenth street.

Saratoga Springs, N. Y.—Chief Elias J. Shadwick, who has been fighting fires successfully in Saratoga Springs for the past forty-three years, thirty-two of which he has served as chief, has made his annual report to Fire Commissioner John T. White. Chief Shadwick has the honor of being the oldest chief of a paid department in point of years of service in the State. Chief Shadwick says: "On December 16, 1910, we received our first automobile fire apparatus, made possible by the generosity of the Misses Swan. I am pleased to say that I made no mistake in recommending the same, as it has saved many times its cost since placed in service, not only to the village, but to others outside of village limits. The cost of maintenance is far less than horse-drawn apparatus and we have the services of the driver as a fireman at the start of a fire, which is an important thing. With horse-drawn apparatus the driver has to stay with the team. It takes two men to hook the team, while one handles the automobile, another saving in the salary of a fireman. The automobile has responded to ninety-five calls since in service without any delay. During the year from February 1, 1911, to February 1, 1912, I have kept an accurate account of the expense and repairs in operating the same. It has made in the above time eighty-five runs to fires, ten of which were out of the village and in which fifty-seven and one-half miles were covered. It has been out seven times as a demonstrating car and instructing new men, making ninety-two runs for the year. Cost of operating and repairs to automobile, February 1, 1911, to February 1, 1912, $28.76. Cost of operating horse-drawn apparatus one year, $590.22; extra fireman, $780; total, $1,370.22. This makes less cost of automobile per year, $1,341.46. I would recommend motorizing the department at once on the grounds of efficiency and economy of maintenance. It would pay for itself in about five years and we would have reliable and safe apparatus for use.

Boston, Mass.—The new auto combination ladder truck which the fire department has been testing made a trip from Engine 37, Longwood and Brookline avenues, Roxbury, to the top of Parker hill in 2 minutes 53 seconds. The route taken was down Longwood avenue, Francis street, Huntington avenue and Parker Hill avenue. On board the truck were eight men, including Fire Commissioner Cole and Chief Mullen.

Butler, Pa.—The auto fire truck at the Central station has rounded out its first year of service in Butler and the machine has more than made good in all particulars. The auto truck responded to 50 of the 53 alarms which came in during the year, the three exceptions occurring following the accident the truck met with at the foot of Brady street some months ago when it skidded and was disabled for a period of about two weeks. This was the only mishap the machine has met with during its year of service and it was found ready to respond to every call made upon it. The truck has answered alarms in all sections of Butler and Lyndora and has yet to find a hill too steep to climb or a road too bad to pull through. The expense of the car maintenance during the year will not average more than $5 or $6 a month for gasoline, oil and other necessities, so that it can be seen that it is a big saving over the horse-drawn apparatus, it being estimated that it will cost about $30 a month to feed and shoe a fire department team. Another important advantage the auto has in the way of economy is that it gives the department the advantage of an extra man over the horse-propelled apparatus, the driver of the machine being able to do fire duty as soon as the truck arrives at a blaze, while the driver of the horse fire wagon must look after his team. This means a saving of about $70 a month in favor of the auto, which with the less cost of expense of maintenance gives the auto an advantage of from $90 to $100 a month over the horse-drawn apparatus. It is doubtful if the horses could have pulled the heavy wagons up some of the hills the truck negotiated in responding to fire alarms during the present winter.

GOVERNMENT AND FINANCE

Commission Government Defeated

Augusta, Ga.—The fight for and against commission government, which ended with the election just held here, resulted in defeat of the proposed new charter by 51 votes.

Commission Form Wins Victory at Denver

Denver, Col.—The State Supreme Court has affirmed the order of Judge James H. Teller, of the district court, that a special election shall be called in the city and county of Denver for the submission of the proposed charter amendments for the establishment of the commission form of government. The decision was by an equally divided court, and under the law and rules of the court an equal division means affirmation of the decision of the lower court.

Klamath Falls to Vote on Charters

Klamath Falls, Ore.—At the next election citizens will be given the opportunity to vote on two charters. One charter was drafted by a number of citizens and provides a commission form of government, and the other was drafted by the mayor and city attorney by order of the council. After considerable discussion it has been practically decided that both instruments will be submitted to the vote of all the people in May. The present Klamath Falls city charter is considered by several bond buyers illegal and on that ground they have turned down the bonds for city hall and garbage sites. But aside from this objection the present charter does not provide for various things that a growing city needs.

Five Cities Defeat Board Plan

Sparta, Wis.—Sparta has turned down the commission form of government by 125 majority against. This ends a campaign of about three months on the part of quite a number for this new style of government. Wausau defeated the commission form of government by 2,008 to 738; New London by 294 to 256, and Merrill by 650 to 550. Portage carried the plan by 538 to 360 while it was defeated in Antigo by 2 to 1.

Savannah Considers Commission System

Savannah, Ga.—The friends of the commission form of government were much disappointed at the failure of this innovation to carry in Augusta at the recent special election held in that city. Savannah is about to venture upon an effort to establish the commission form of government and Mayor Tiedeman will appoint a committee to take the matter up and prepare a proposed charter.

Municipal Bank to Be Tried at Spokane

Spokane, Wash.—The municipal government and the labor unions of Spokane have united in a project to form a quasi-municipal bank, which will eliminate the contractor from the municipal work of Spokane, according to a statement by Commissioner of Public Works D. C. Coates. The plan as outlined proposes the organization of a co-operative investment company to handle the city securities. The investment will be under the control of the unions. It is proposed that the interest-bearing bonds of the city be placed with the institution, the investment company purchasing them at par with the surplus now in the treasuries of the different unions now on deposit in local banks. The investment company then will offer the bonds to investors at par in small lots on payments as small as $10 down and $10 per month. According to Commissioner Coates the plan will place the bonds of the city bearing 6 per cent. within reach of the small investor; it will eliminate the profit of local banks made by discounting the bonds and reselling to investors at par; it will effect a saving of from 5 to 7 per cent. to taxpayers on municipal work now done by contractors. It is averred by Commissioner Coates that the plan will insure the elimination of contract work and will allow the doing of municipal work by day labor without tying up a large amount of the city's cash. Contractors formerly were paid in municipal bonds, which they discounted, adding the discount to the price of the work.

STREET CLEANING AND REFUSE DISPOSAL

Will Commence Waste Paper Crusade

Philadelphia, Pa.—Mayor Blankenburg has been prompted to take up the waste paper nuisance investigation upon a complaint made by a resident of a section of West Philadelphia, who mailed the mayor a communication with 19 pieces of advertising matter thrown upon his doorstep between the hours of 11 a. m. of February 14 and 1 p. m. of February 15. The collection included six copies of two editions of a so-called weekly newspaper, two copies each of two ward papers, one each of a daily and a weekly, a "news letter," medicine directory, envelopes with enclosures, folders, cards, circulars and pamphlet. "What we require is more stringent legislation against this indiscriminate distribution of reading matter of this character," said the mayor, discussing the collection placed before him. "The restrictions should be made so that the law can be enforced and I would like to arouse public interest in the matter so that something definite can be done.

City Realizes First Revenue from New Incinerating Plant

Rochester, N. Y.—The first carload of baled paper from the city's new waste disposal and incinerating plant has been shipped to the Lawless Paper Company, Penfield. The carload consisted of nearly ten tons and the revenue to the city will be about $50. The new plant has been in operation about a month and the paper shipped to Penfield was separated at the incinerator from the rubbish and refuse gathered from various parts of the city. Tin cans, bottles and rags also are separated from the rubbish brought to the plant and these will be sold, Commissioner of Public Works Herbert W. Pierce already having an order for the first carload of tin cans.

Garbage Commission Reports After Two Years' Work

Grand Rapids, Mich.—After two years of investigation the garbage commission appointed by Mayor Ellis to solve the garbage collection and disposal problem has reported. The commission decided that while incineration of the city's garbage was by far the most sanitary method of disposal, it was much too expensive. The operation of a reduction plant was favored as the least expensive method of disposal. Municipal collection of garbage was declared to be an expensive proposition, and it was thought that the company operating the reduction plant should collect the garbage under the supervision of the board of health. The cost of incineration per ton, including everything, was fixed at $1.25, with a revenue of 60 cents a ton from by-products, leaving a net cost per ton of 65 cents. It is estimated that 49,800 tons of garbage, ashes and refuse are collected every year. The net cost of incineration after deducting the revenue from the by-products would be $32,370. This cost, together with the cost of collection, makes the incineration of the garbage an unprofitable undertaking. The grease and fertilizer recovered from a reduction plant will pay for the operation and collection of the garbage. Under the present system it cost the city $26,500 a year to collect and deliver its garbage to the Utilization company in Paris township. The cost of burning the refuse in the city incinerator on the market is $2,568.61. It is figured that this $29,068.61 is a total loss to the city. Chairman Frank C. Steinmann, of the garbage investigation commission, said: "I believe that the city ought to realize a good profit from its enormous supply of garbage. Up to the present time it has always been all going out and nothing coming in. A large number of privately and municipally owned reduction plants are showing a good margin of profit, and this city should make some money out of its garbage."

RAPID TRANSIT

Must Continue to Pay Fifteen-Cent Fare

Bridgeport, Conn.—A petition for a ten-cent fare to Hartford, asked for by citizens of Manchester, has been denied by the Public Utilities Commission. The commission decided, in view of evidence presented and facts obtained, that the fare of fifteen cents now asked was not excessive. The commission found that the value of the Manchester line is about $900,000, and on this the company reaps a dividend of practically 7 per cent., as against a dividend of 2½ per cent. on the capitalization of $40,000,000 for the entire Connecticut company's system.

New East Cambridge Bridge Completed

Boston, Mass.—The draw span of the East Cambridge bridge is now in perfect working order and is ready for use when operations begin over the bridge about the middle of April or early in May. In its arrangement it is unique, there being only one other similar span in this country. That one is in New Jersey. The draw is of the trunnion type, being specifically designated as a Strauss trunnion bascule draw. It is constructed of steel and has a length of 75 feet, though the draw opening is only 45 feet wide. The system of mechanism for the prevention of accidents is elaborate, making accidents practically impossible. Locks and bumpers are used for this purpose, the former, located on the Boston side, cuts off the current of electricity, so that cars running over the bridge will lose their motive power. Just before the draw is reached bumpers automatically rise to stop any cars in an emergency. The draw is operated entirely by electricity and requires only 30 seconds to be opened. It is counter-weighted at its rear end by 110 tons. Every car running over the bridge must come to a stop before the draw can be raised, nor can it be opened until the bumpers come up. The arrangement of the trolley wire on top of the draw is such that when the draw is raised the wire is always taut, kept this way by weights. Slackening wires have always been a source of much inconvenience on draws over which electric cars run, but this trouble has been solved in the Strauss basque draw. After the draw has fallen back to its usual position following its raising no cars can be set in motion until the car-stops set the signal for them to go ahead after the current is set. The signals cannot be set while the draw is raised because there is no current.

MISCELLANEOUS

Las Cruces Women Beautify the Park

Las Cruces, N. M.—The Women's Improvement Association has decided to continue to give from time to time card parties and entertainments to increase the park improvement fund for the upkeep of the parks. The city park is owned by a band of twelve energetic women who have improved and made it the beauty spot of the town. The trees are large, Chinese umbrella variety, uniform in size and entirely surround the park. The walks are bordered in the summer time with flowers and the pavilion in the center has been repainted. They have also had planted vines and creepers over the pavilion, and ordered a large shipment of roses and other shrubbery and flowers.

City to Maintain Free Agency

Fort Worth, Tex.—With the idea that the man who fails to obtain employment becomes a charge on the city, while if he secures employment he becomes an aid, Commissioner Maddox will ask that the City Commission establish, as soon as the City Hall repairs are completed, a free city employment agency. Office space for such a department is being provided for in the remodeling of the building, which is now nearing completion. Under the plan suggested by Commissioner Maddox the bureau is to act for men and women alike without any charge. The expense, it is said, will be nominal.

Municipal Markets for Farmers and Consumers Asked

Boston, Mass.—Municipal markets where farmers and consumers can deal directly among one another are advocated by a committee of women which is to call on Mayor Fitzgerald and request his co-operation, by instruction of the Woman's Homestead Association, which held a meeting on Friday to protest against what it terms "the butter, egg and potato trusts." The organization also appointed a committee to see Governor Foss to request him to appoint a committee as quickly as possible "to investigate the extortionate prices of the necessities of life." The association alleges that it has testimony which shows that in 1909 thousands of bushels of apples and potatoes were allowed to rot in the fields because it cost more to ship than the farmers could get for their products, while at the same time apples and potatoes were selling at high prices in Boston. The appeal to the Governor is signed by Charlotte Smith, president, and Susan E. Stevens, secretary, and several members, and the appeal for the appointment of a committee of women to investigate is signed by 100 women.

Research Bureau Is Proposed by Chamber

Dayton, O.—At a recent meeting of the educational committee of the Chamber of Commerce the establishment of a bureau of municipal research was discussed and plans for obtaining such service outlined. While it was agreed that the expense incident to an institution of this kind would be pretty heavy for this city alone to bear, the idea was advanced that Indianapolis and Columbus might be prevailed upon to enter into a joint arrangement, and steps to this end will be instituted. The advisability of having Dayton included in the circuit on which great paintings, pictures and statuary are exhibited was given consideration, as was also the matt r of making the Memorial Hall a center for the dissemination of useful knowledge in the way of lectures.

Appoint Committee for Reorganizing Purchasing Methods

Cincinnati, O.—Mayor Hunt has appointed a committee to study and reorganize methods of purchasing supplies for the city. The committee, which met for the first time last week, is composed of the mayor, City Purchasing Agent McGrath, two employes of his office, City Auditor Washburn and F. R. Leach, accounting director of the Bureau of Municipal Research. Daily meetings will be held at which plans will be made that will enable the purchasing agent to determine just what quantity and quality of goods the city will need for a given period and how these can be bought at the lowest prices. With such a system of wholesale buying a plan of inspecting goods received will be drawn. The department will insist that goods sold and delivered to the city shall be strictly in accordance with the specifications.

Will Award Prizes for Best Decorated Lawns

Salt Lake City, Utah.—To help make Salt Lake a city beautiful the Commercial Club publicity bureau is to give away several cash prizes for the best-looking lawns and vacant lots. This plan has been adopted in many eastern cities. The plan is the result of the donation of $300 by a prominent resident with the condition that the club raise a similar amount. The club goes this one better by asking the city commission to match the $600 already assured, making a total of $1,200. The governing committee indorsed the suggestion of Secretary Joseph E. Caine that the bureau purchase 100 post cards depicting Salt Lake scenes for distribution on Utah day. These will be given to the children in the public schools and to business and professional men who will mail them to persons in the east. The post cards show a variety of views and each will bear the words, "For information concerning Salt Lake and Utah write to the Salt Lake Commercial Club." Five thousand will be distributed through the club's mailing list.

City Party to Inspect Plants

Schenectady, N. Y.—The itinerary of the trip for the purpose of inspecting sewage disposal plants which Mayor Lunn proposes to take in company with Commissioner of Public Works Mullen and Dr. Rudolph Hering, consulting engineer, is outlined in a letter received by Secretary Walter H. Reed of the Board of Trade from Commissioner Mullen inviting him to accompany the party in the interests of the board. The first plant visited will be that at Westmount, near Montreal, Canada, where garbage is disposed of by incineration; thence to the plant in Montreal, said by the mayor to be one of the poorest plants on the continent. Milwaukee will come next on the list, and here the party will inspect the largest disposal plant in the country. On the return trip Cleveland, Columbus and Detroit will be visited in the order named. In two of these cities the reduction system is in use. The opportunity of inspecting Detroit's municipal asphalt plant will also be taken advantage of by the party on its way home. This is said to be operated at the least cost and to be the most successful municipal asphalt plant in the country.

Announces Steady Advancement of City Improvements

Montgomery, Ala.—"There has been a steady continuation of our advancement in the field of municipal improvements and the development of the city on lines of sanitation, parks, streets and sidewalk improvements and in all the general fields of civic development." This is the concise statement made by City Engineer A. R. Gilchrist in his annual report submitted to the city commission. The report of the city engineer is most complete, covering every phase of city development. It shows that during the year 1911 there was spent for sidewalk paving improvements, $72,738.65; for the paving of streets, $107,626.86; for storm water sewers, $18,247.47; for curbing, $17,337.13; for surface gutters, $8,071.77; for sanitary sewers, $2,660.38. Regarding the improvements to the water works system the report deals not only with the installation of the new electrically equipped pumps at the water works pumping station but also with the pumping station at the river bank whereby filtered water is furnished to manufacturing industries in North Montgomery and to the railroads for boiler purposes. This pump at the river station is operated, the report shows, by the excess power at the pumping station, and consequently without extra cost to the city, while the return from the water sold is considerable. The report also points out that this plant at the river, or rather the selling of water to manufacturing concerns therefrom, conserves the artesian water of the city and saves a large drain on the well water supply. The city engineer also states that this plant, or rather the capacity of the plant, can be doubled at a slight cost of not exceeding $6,000. In dealing with the incinerator plant the city engineer says: "Disregarding the question of economics and the ability of the forces and teams at the disposal of the sanitary department to handle all the garbage and haul it to the plant, I desire to state, after thorough inspection of the plant and its operation since putting into service that it is in its entirety a thorough example and type of modern high-grade and sanitary garbage destructor, developed to the highest standard known at this time."

LEGAL NEWS

A Summary and Notes of Recent Decisions—Rulings of Interest to Municipalities

Exercise of Governmental Functions—Liability

Smith's Adm'r v. Commissioners of Sewerage of Louisville.—The commissioners of sewerage of a city created by Kentucky statute, providing for a sewerage commission in cities of the first class with power to construct sewers, which, when ready for use, shall be turned over to the board of public works of the city for future control, is a public board of the city created for a special governmental purpose, and it is not liable for the negligent death of a laborer engaged in sewer work under a foreman and superintendent of the commission.—Court of Appeals of Kentucky, 143 S. W. R., 3.

Defect in Street—Injury to Firemen

City of Valparaiso v. Chester.—A fireman who is in the employ of a city, whose duties require him to drive through the streets at great speed on fire trucks, does not assume the risk of injury from dangerous obstructions in the street created or suffered by the negligence of the city.—Supreme Court of Indiana, 96 N. E. R., 765.

Maintenance of Harbor Buoy

Avery v. Mayor and City Council of Baltimore.—A city which, in the exercise of its governmental functions, has placed and maintains a buoy in a harbor to mark the lines of an anchorage ground can be held liable for an injury to a vessel caused by such buoy only on the ground of negligence, and, where it is shown that the buoy was properly placed and secured, that is was visited by city employes nearly every day, and remained in apparently good condition, it is not sufficient to establish negligence that it in some unknown way became submerged, and a vessel ran upon it and was injured.—United States Circuit Court, 192 F. R., 53.

Nuisances—Animals at Large

Haldeman v. Colorado City.—Under Rev. St. 1908, which authorizes city councils to declare what shall be a nuisance and to abate the same and to impose fines for their creation or continuance, an ordinance declaring that animals running at large within the city limits as a nuisance, and providing a fine for permitting animals to so run at large, is a proper exercise of the power granted.—Supreme Court of Colorado, 120 P. R., 1041.

Assessments—Nominal Benefits

City of Huntington v. Cline et al.—A judgment will not be reversed for failure to assess nominal benefits against lots affected by a street improvement.—Appellate Court of Indiana, 97 N. E. R., 365.

Change of Grade—Damages

Coalter v. Salt Lake City.—Where an owner of property purchased it long after the city had established a proper grade, and made all of the street conform thereto, except the sidewalk space, and built a house and raised the level of the lot, any injury to the property caused by the lowering of the sidewalk to the established grade was caused by the imprudence of the owner in failing to notice the grade established and improve with reference thereto, and cannot be recovered from the city.—Supreme Court of Utah, 120 P. R., 851.

Streets—Vacation

Heuston v. City of Tacoma.—Laws of 1901, providing a manner in which a city may vacate a street, and a mode by which a person owning real estate abutting on a street may obtain a vacation of it, the result of which will vest the title and use of it in him and other abutting owners, excludes all other remedies; so that, such provisions not being invoked, a street is not vacated, with such results as to the title, by the city condemning for and improving another street, taking the place of the previous street.—Supreme Court of Washington, 120 P. R., 872.

Intoxicating Liquors—Regulations—Clubs

Bachelors' Club v. City of Woodburn et al.—Transactions whereby an incorporated club issues coupon books to its members at a fixed price redeeming the coupons in liquors carried by the club constitute sales, though no profits result to the club, since it is no defense to a charge of unlawfully disposing of liquor that the sale was made at a loss.—Supreme Court of Oregon, 119 P. R., 339.

Distribution of Taxes—School Expenses

City of Paducah v. Board of Education of City of Paducah.—Kentucky statute provides that the board of education shall annually ascertain approximately the amount of money necessary for school expenses and report the same to the auditor, and that the general council shall levy and collect such taxes as may be requested; the money arising therefrom to be used under the direction of the board. Held, that the board of education can require the city to pay to it all the taxes levied and collected for school purposes.—Court of Appeals of Kentucky, 143 S. W. R., 1.

Public Officer—Interest in Municipal Contract

Morrissey v. Sewer, Water & Street Commission of Saratoga Springs.—Village Law, providing that an "officer" shall not be interested in a contract which he or a board of which he is a member makes on behalf of the village nor in furnishing work or materials, held not to apply to the street superintendent of the village of Saratoga Springs, as the act creating such office omitted as to him the restriction applicable generally to village officers, so that he may recover for the use of a horse and wagon furnished by him to convey the sewer, water, and street commissioner about the village in the discharge of his duties.—New York Supreme Court, 133 N. Y. S., 365.

Damages—Instructions

Tiggerman v. City of Butte.—A requested charge in a personal injury action that, if plaintiff was injured on a certain day, it then became her duty "to use all reasonable care and precaution to minimize the damages that might result," and, if she failed to do so, the jury could not allow such damages "that resulted by her want to exercise such care and precaution," was substantially correct; the use of the word "all" before the word "reasonable" not imposing a greater burden upon plaintiff than required by law, since it added nothing to the instruction, and might have been omitted.—Supreme Court of Montana, 119 P. R., 477.

Bids—Contracts—Variance

Martin v. City of Chanute.—A joint and several bid of a city for a lease of the gas rights in the lands of an individual and of a corporation described the land of the corporation by government surveys, and as containing 1,120 acres, more or less. The city had inspected the premises, and knew, or had the opportunity of knowing, the location of schoolhouse grounds of two acres on the tract of the corporation. Held, that the contract describing the land of the corporation as containing 1,118 acres, was not invalid for the variance between its terms and the bid.—Supreme Court of Kansas, 119 P. R., 377.

Street Cars—Reasonable Regulations

South Covington & C. R. Co. v. City of Covington.—A municipal ordinance providing that it is the duty of all street car companies to operate cars in sufficient numbers to reasonably accommodate the public, when interpreted with the common-law rule that it is the duty of a common carrier to provide reasonable accommodations for such passengers as in the exercise of ordinary care can be anticipated, is not unreasonable.—Court of Appeals of Kentucky, 143 S. W. R., 28.

Construction of Contract

J. Jacob Shannon & Co. v. City of Lancaster.—Where a municipal contract for sewers provides that on the contractor's default the city may complete the sewer at his expense, and use such materials as may be found on the works, the city had the right to take possession of certain materials purchased by the contractor, and delivered along the line of the sewer, though the property was sold subject to inspection and acceptance, the privilege of such inspection and rejection being that of the city, which right it was entitled to exercise within a reasonable time.—Supreme Court of Pennsylvana, 82 A. R., 55

Injury to Traveler—Public Street—Evidence

Peltier v. City of St. Louis.—Where, in an action for injuries to a traveler on a defective street, an ordinance introduced in evidence recognized the existence of the street as a public street, and oral testimony showed that the street had been extensively traveled by the public for almost 50 years, and there was no evidence of any consequence to the contrary, the court must rule, as a matter of law, that the street was a public street of the city.—Supreme Court of Missouri, 141 S. W. R.

THE MUNICIPAL INDEX

In Which Are Listed and Classified by Subjects All Articles Treating of Municipal Topics Which Have Appeared During the Past Month in the Leading Periodicals.

It is our purpose to give in the second issue of each month a list of all articles of any length or importance which have appeared in all the American periodicals and the leading English, French and German ones, dealing more or less directly with municipal matters. The index is kept up to date, and the month of literature covered each time will be brought up to within two or three days of publication. Our chief object in this is to keep our readers in touch with all the current literature on municipal matters. In furtherance of this we will furnish any of the articles listed in the index for the price named after each article, except that where an article is continued in two or three issues of the paper, the price given is for each of said issues. In addition to the titles, where these are not sufficiently descriptive or where the article is of sufficient importance, a brief statement of its contents is added. The length also is given, and the name of the author when it is a contributed article.

ROADS AND PAVEMENTS

Good Roads—The Symbol of Progress. By R. E. Speakman. 3 pp., Contract Record, Feb. 21. 20 cts.

The Pan-American Highway. Illustrated. 2 pp., Brick, March 1. 10 cts.

County Road Construction in Ontario. Paper before Ontario Good Roads Association. By W. A. McLean. 2 1-2 pp., Canadian Engineer, Feb. 29. 15 cts.

Road Improvement in the South, Past and Present. By L. W. Page. 2 pp., Manufacturers' Record, Feb. 22. 50 cts.

Mileage and Cost of the Public Roads of the United States. 5 pp., Engineering and Contracting, Feb. 21. 10 cts.

Improved Roads in the United States. 1-4 p., Municipal Journal, March 7. 10 cts.

Mileage and Cost of Public Roads in the United States. By M. O. Eldridge. 1 p., Good Roads, March 2. 10 cts.

The Colorado Springs and Denver Road. By B. A. Banta. Illustrated, 1 p., Good Roads, March 2. 10 cts.

State Highway Construction in New York. 1 1-3 pp., Engineering News, Feb. 29. 15 cts.

Building Good Roads in the Virginia Mountains. By W. D. Roberts. Illustrated, 1 p., Good Roads, March 2. 10 cts.

American and Foreign Roads. Interview with Samuel Hill. Illustrated, 3 pp., Good Roads, March 2. 10 cts.

Maine Road Work in 1911. 1-4 p., Municipal Journal, Feb. 15. 10 cts.

The Road: Past, Present and Future. Paper before Royal Institute. By J. H. A. McDonald. 5 pp., Surveyor, Feb. 23. 40 cts.

Federal Aid for Good Roads. Paper before Ontario Good Roads Convention. By H. J. Bowman. 1 p., Canadian Engineer, Feb. 29. 15 cts.

Laws, Canadian Road. 2 pp., Canadian Engineer, Feb. 29. 15 cts.

Highway Department, Organization of the Ohio State. By J. R. Marker. 6 pp., Better Roads, February. 10 cts.

Organization of the Engineering Department of the Coleman-Du Pont Road. By F. M. Williams, Chief Engineer. 4 pp., Better Roads, March. 10 cts. 2 1-2 pp., Good Roads, March 2. 10 cts.

Thawing Services by Electricity. 1-4 p., Municipal Journal, Feb. 15. 10 cts.

Building, Practical Road. By J. G. Robertson. 1 1-2 pp., Western Municipal News, March. 10 cts.

Practical Road Building. By J. N. Edy. Illustrated, 3 pp., Municipal Engineering, March. 25 cts.

Convict Labor in Onondaga County, N. Y., An Experiment with Road Construction by. 1 1-2 pp., Engineering and Contracting, Feb. 28. 10 cts. 1 1-3 pp., Engineering Record, Feb. 10. 10 cts.

Traction Engine in Highway Grading, Uses of the. 1-3 p., Engineering Record, Feb. 24. 10 cts.

Utilization of Motor Truck Trains in the Maintenance of Trunk Highways. By L. W. Page. 3 pp., Better Roads, March. 10 cts.

Rolling of Water-bound Macadam Roads, Steam. 1 1-2 pp., Canadian Engineer, Feb. 29. 15 cts.

Granite and Limestone in Highway Construction, Use of. By Harry Tipper. 2-3 p., Engineering Record, Feb. 17. 10 cts.

Camden Chert as a Road Making Material in Tennessee. 2-3 p., Engineering Record, March 2. 10 cts.

Plank Roadway 100 ft. Wide Built on Marsh Land Connecting Two Cities. The old plank road between Newark and Jersey City. Illustrated, 2 pp., Engineering Record, Feb. 17. 10 cts.

Surface Treatment of Park Roads in Washington, D. C. Paper before American Association for the Advancement of Science. By Spencer Cosby. Illustrated, 2 pp., American City, February. 10 cts. 2 pp., Good Roads, March 2. 10 cts.

Clay Roads, Tannic Acid for. 1-4 p., Municipal Journal, Feb. 22. 10 cts.

Bituminous Concrete Pavements in Washington, D. C. Paper before the American Association for the Advancement of Science. By Capt. Mark Brooke. 3 pp., Municipal Engineering, March. 25 cts. 2 pp., Good Roads, March 2. 10 cts.

Distributing Machines for Applying Bituminous Material. Paper before American Association for the Advancement of Science. By H. B. Drowne. 1 p., Engineering and Contracting, Feb. 7. 10 cts.

Failure of Certain Oil Macadam Roads in Los Angeles County. Illustrated, 1 p., Engineering and Contracting, Feb. 28. 10 cts.

Relations of Modern Road Surfacings to Fish Life. Paper before Institution of Municipal and County Engineers. By W. J. A. Butterfield. 7 pp., Surveyor, Feb. 16. 40 cts.

Do Surface Washings from Tarred Roads Kill Fish? 2-3 p., Municipal Journal (London), Feb. 17. 15 cts.

Dust Suppression and Road Improvement, Proposals for. By Dr. Guglielminetti. 1 1-2 pp., Surveyor, Feb. 23. 40 cts.

Work with Artificial Dust Layers. Illustrated, 8 pp., Good Roads, March 2. 10 cts.

Chemistry of Modern Highway Engineering. Paper before American Association for the Advancement of Science. By Provost Hubbard. 2 1-2 pp., Good Roads, March 2. 10 cts.

Culverts, Construction of Concrete, During Winter. Communication from B. E. Gray. 2-3 p., Engineering Record, Feb. 17. 10 cts.

Concrete Road Building in Ada County, Ida. By H. L. Quigley. Illustrated, 2 pp., Good Roads, March 2. 10 cts.

Constructing a Concrete Steel Pavement. By Howard Eggleston. 2 pp., Engineering and Contracting, Feb. 28. 10 cts.

Tar-Surfaced Concrete Pavement at Portland, Me. 1-3 p., Engineering and Contracting, Feb. 28. 10 cts.

Street Plans, Roman Influence on City. By C. H. Higgins. Illustrated, 2-3 p., Engineering News, Feb. 8. 15 cts.

Grading, Heavy Street. Illustrated. 2-3 p., Municipal Journal, March 7. 10 cts.

Reducing Grades in Pittsburgh. 1-4 p., Municipal Journal, March 7. 10 cts.

Staking Out Street Work. Methods employed by the majority of city engineers in Iowa for curbs, gutters and street paving. 1 p., Municipal Journal, Feb. 29. 10 cts.

Paving for Cambridge, Mass., New. 2 pp., Engineering News, Feb. 29. 15 cts.

Street Work at Newport, R. I. From Report of Commissioner Sullivan. 3-4 p., Municipal Journal, Feb. 15. 10 cts.

Sheet Asphalt Paving Mixtures. Paper before American Association for the Advancement of Science. By H. B. Pullar. 1 p., Good Roads, March 2. 10 cts.

Wood Paving Experiments, Conducted by the Department of Agriculture and City of Minneapolis. Pines, tamerack, fir, larch, birch and hemlock tested. Illustrated, 1 1-2 pp., Municipal Journal, Feb. 22. 10 cts.

Creosoted Wood Block Pavement with Cement Grout Filler. Paper before Illinois Society of Engineers and Surveyors. By A. J. Schafmayer. 1 1-3 pp., Engineering Record, Feb. 10. 10 cts.

Results of Four Year Service Tests on the Experimental Wood Block Pavement at Minneapolis. 1 1-2 pp., Engineering and Contracting, Feb. 14. 10 cts.

Use of Treated Wood Paving Blocks. Paper before Engineering Society of Wisconsin. By F. M. Bond. 1-2 p., Engineering Record, Feb. 24. 10 cts.

Creosoted Wood Block Pavement with Cement Grout Filler. Paper before Illinois Society of Engineers and Surveyors. By A. J. Schafmeyer. 1 1-2 pp., Contractor, Feb. 15. 20 cts.

Stone Paving in Birmingham, England, New Kinds of. 1-4 p., Municipal Journal, Feb. 15. 10 cts.

Brick Paving Block, Hauling, with a Motor Truck. Illustrated, 1-3 p., Engineering Record, March 2. 10 cts.

Construction of a Wire-Cut-Lug Brick Pavement on the Buffalo-Williamsville Road. Illustrated, 4 pp., Good Roads, March 2. 10 cts.

Viaduct at Cincinnati, O., Reinforced Concrete. By F. L. Raschig. Illustrated, 5 pp., Engineering and Contracting, Feb. 7. 10 cts.

Maintenance Bureau of a Municipality, Organization of a Highway. By W. H. Connell. Paper before American Association for the Advancement of Science. 3 pp., Good Roads, March 2. 10 cts.

Sidewalks, Sloppy. 1-2 p., Municipal Journal, Feb. 22. 10 cts.

Concrete Walk Specifications. 2 pp., Municipal World, February. 10 cts.

Separately Moulded Reinforced Slab for Gutter Boxes at Sidewalk Crossings. Paper before Kansas Engineering Society. By L. E. Curfman. Illustrated, 2-3 p., Engineering and Contracting, Feb. 14. 10 cts.

SEWERAGE AND SANITATION

Sewerage Design, Some Principles of. 1-3 p., Municipal Journal, March 7. 10 cts.

Outlet Under Pier, A Sewer. Illustrated, 1-2 p., Engineering Record, Feb. 10. 10 cts.

Intercepting Sewer, The Susquehanna River. Improving the condition of the waterfront at Harrisburg, Pa. Illustrated, 1 p., Engineering Record. Feb. 24. 10 cts.

Inverted Siphon in Street Drainage, Use of an. Paper before Kansas Engineering Society. By L. E. Curfman. Illustrated, 2-3 p., Engineering and Contracting, Feb. 14. 10 cts.

Tunnel in Rock, A Small Drainage. 1-2 p., Engineering Record, March 2. 10 cts.

Trenching with Sewer Excavator in Moundsville, W. Va. By A. W. Peters. 1 p., Engineering and Contracting, Feb. 28. 10 cts.

Waterproofing Sewers at South Orange, N. J., Methods of. By E. C. Cattley. 2-3 p., Engineering and Contracting, Feb. 21. 10 cts.

Cost of Concrete Sewers. Paper before Western Society of Engineers. By Victor Windette. 1 p., Canadian Engineer, Feb. 22. 15 cts.

Pollution of the River Tame. By J. D. Watson. Illustrated, 3 pp., Engineering News, Feb. 8. 15 cts.

Royal Commission on Sewage Disposal. Report on Growth of Seaweed in Sewage Polluted Estuaries. 2 1-2 pp., Water Feb. 15. 25 cts.

Sewage Disposal, The Fundamental Principle of. 1-2 p., Municipal Journal, Feb. 29. 10 cts.

Compulsory Sewage Purification. 1-2 p., Engineering Record, Feb. 24. 10 cts.

German Sewage Purification Works at Grafschwerin and Holzwickede. Emscher tanks for preliminary and final clarification; percolating filters, sludge beds and screens. Dimensions and cost. Periodical, chemical and bacteriological analyses. Translated and abstracted by P. E. Mebus. Illustrated, 3 1-2 pp., Municipal Journal, Feb. 22; illustrated, 2 pp., Feb. 29. 10 cts.

Design of the Sewage Disposal Plant at Winchester, Ky. By T. E. Collins. Illustrated, 1 p., Engineering and Contracting, Feb. 14. 10 cts.

Batavia Sewage Disposal Plant. Twelve Imhoff Tanks and sprinkling filter, dosing tank with flushing siphon, sludge bed, pumping plant; details of construction; cost. Illustrated, 2 1-2 pp., Municipal Journal, March 7. 10 cts.

A Small Neglected Septic Tank Installation. Paper before Illinois Society of Engineers and Surveyors. By F. L. Stone. 2-3 p., Engineering News, Feb. 8. 15 cts.

Small Sewage Disposal Plants. 1-2 p., Municipal Journal, Feb. 22. 10 cts.

An Outgrown Sewage Purification Plant at Madison, Wis. By James Mackin. 1 p., Engineering News, Feb. 15. 15 cts.

Use and Abuse of Sewage Disposal Plants. Paper before Kansas Engineering Society. By C. A. Smith. 1 1-2 pp.,

Engineering and Contracting, Feb. 7. 10 cts.

Sewage Disposal Plants. Maintenance as important as correct designing and construction; simple tests of efficiency of operation; intelligent oversight. From paper before Kansas Society of Engineers. By C. A. Smith. 1 p., Municipal Journal, Feb. 15. 10 cts.

Sewage Disposal Plant at Winchester, Ky. Illustrated, 1 p., Engineering Record, March 2. 10 cts.

Plea for Common Sense in State Control of Sewage Disposal. 1 1-2 pp., Engineering News, Feb. 29. 15 cts.

Sewage Disposal Works at Baltimore. Electricity for light and power supplied by turbines operated by effluent from sprinkling filters. Illustrated, 2 1-3 pp., Engineering Record, Feb. 24. 10 cts.

Discussion of Engineering Problems Connected with Biological Sewage Disposal. Discussion of paper before Canadian Public Health Association. By L. Pearse and T. A. Murray. Illustrated, 2 pp., Engineering and Contracting, Feb. 28. 10 cts.

Summary of Preliminary Report on Sewage Disposal at Cleveland, Ohio. By R. W. Pratt. 2-3 p., Engineering News, Feb. 8. 15 cts.

Problem in Sewage Purification Arising from Neglect and Failure of Septic Tank. Paper before Illinois Society of Engineers and Surveyors. By F. L. Stone. 1 1-2 pp., Engineering and Contracting, Feb. 7. 10 cts.

Most Important Sewerage and Sewage Disposal Report Made in the United States. Pittsburgh advised to disregard recommendations of the Pennsylvania Health Department. 3 pp., Engineering Record, Feb. 24. 10 cts.

Pittsburgh Sewage Disposal Report. 4 pp., Engineering News, Feb. 29. 15 cts.

Public Health, New. By H. W. Hill. 1 1-2 pp., Engineering News, Feb. 29. 15 cts.

Ordinances, Rules and Regulations Pertaining to Public Hygiene, Municipal. 4 1-2 pp., Public Health Reports, Feb. 9; 5 pp., Feb. 16; 4 pp., Feb. 23; 6 pp., March 1.

Sections of the Sanitary Code as Amended to Make Effective the New Classification of Milk Sold in New York City. 8 pp., Bulletin, Department of Health, New York City, January.

Inspection, Community Health Building by Means of. By C. B. Ball. 2 1-2 pp., American City, February. 15 cts.

Milk Regulations of the Department of Health, New. 6 pp., Bulletin, Department of Health, New York City, January.

Hospitals and Sanitoria. Paper before Institute of Sanitary Engineers. By A. H. Scott. 3 pp., Surveyor, Feb. 23. 40 cts.

Typhoid Fever at Texarkana, Investigation of. By J. R. Ridlon. 9 pp., Public Health Reports, Feb. 16.

Cause of Typhoid Outbreaks. Illustrated, 3-4 p., Municipal Journal, Feb. 22. 10 cts.

Vegetables as a Possible Factor in the Dissemination of Typhoid Fever. By R. H. Creel. 6 pp., Public Health Reports, Feb. 9.

Bacteriology of the Texas State Board of Health, The New Department of. Bulletin Texas State Board of Health, January.

WATER SUPPLY

Water Supply in South Africa. Paper before Institution of Civil Engineers. By D. C. Leitch. 1 p., Surveyor, Feb. 9. 40 cts.

Water Bearing Strata of France. By Dr. Ed. Imbaux. Illustrated, 8 pp., La Technique Sanitaire, February. 60 cts.

Safeguarding the Boston Water Supply. 1 p., Fire and Water, Feb. 7. 10 cts.

Wells and Well Pumping Machinery. Paper before Indiana Engineering Society. By Chas. Brossman. Illustrated, 7 pp., Municipal Engineering, March. 25 cts.

Evaporation Record, California. By Edwin Duryea, Jr. 3 pp., Engineering News, Feb. 29. 15 cts.

Dam, Failure of the Austin. Paper before the Engineers' Club of Philadelphia. By J. W. Ledoux. Illustrated, 2 pp., Fire and Water, Feb. 21. 10 cts.

Large Rock Crushing Plant for the Construction of the Kensico Dam. Equipment gives daily capacity of 500 cubic yards to single unit plant. By S. W. Traylor. Illustrated, 1 2-3 pp., Engineering Record, Feb. 24. 10 cts. Illustrated, 3 pp., Engineering News, Feb. 22. 15 cts.

An Efficient Cheap Dam. By H. D. Mendenhall. Illustrated, 1 1-2 pp., Engineering News, Feb. 22. 15 cts.

An Automatic Dam Crest. By G. F. Stickney. Illustrated, 2 1-2 pp., Engineering News, Feb. 15. 15 cts.

Failure of a Log and Earth Fill Dam at Union Bay, B. C. By A. K. Mitchell. 1 2-3 pp., Engineering News, Feb. 29. 15 cts.

Failure of a Low Concrete Dam Near Shippensburg, Pa. By C. E. Ryder. Illustrated, 2 pp., Engineering Record, Feb. 17. 10 cts.

Design of Masonry Dam. Communication from C. A. Mees. Illustrated, 1 p., Engineering Record, Feb. 17. 10 cts.

Reservoir, Relining a Brick Lined. By Thos. Fleming, Jr. Illustrated, 1 1-3 pp., Fire and Water, Feb. 7. 10 cts.

Two Four-Million Gallon Circular Reinforced Concrete Reservoirs at Brockton. Illustrated, 1 1-3 pp., Engineering Record, Feb. 10. 10 cts.

Cylindrical Gate Valves to Control Reservoir Discharge. Illustrated, 1 p., Engineering Record, March 2. 10 cts.

Aqueduct, Notable Work on the Catskill. Illustrated, 3 1-2 pp., Municipal Engineering, March. 25 cts.

Grouting Aqueduct Tunnels. Illustrated, 1-2 p., Municipal Journal, Feb. 29. 10 cts.

Pipe, Diagrams for Friction Loss in New Cast Iron. By A. N. Talbot and L. M. Enger. Illustrated, 1 1-3 pp., Fire and Water, Feb. 14. 10 cts.

Electrolysis in Underground Pipes, Insulation as a Means of Minimizing. 1 1-2 pp., American Gas Light Journal, Feb. 19. 10 cts.

Laying a 30-Inch Submerged Intake Pipe at Ogdensburg. Illustrated, 1-2 p., Engineering Record, Feb. 10. 10 cts.

Water Works Extension in Kansas City, Kansas. Illustrated, 4 pp., Engineering and Contracting, Feb. 21. 10 cts.

Hydrants, Specifications for Post. Report to New England Water Works Association. 2-3 p., Fire and Water, Feb. 28. 10 cts.

Pumping Capacity, Increasing. Illustrated, 1 1-2 pp., Municipal Journal, March 7. 10 cts.

Properties of the Air Lift Pump. Its advantages and Disadvantages. From Bulletin No. 450, University of Wisconsin. By G. J. Davis and C. R. Widener. Illustrated. 3 pp., Engineering and Contracting, Feb. 14. 10 cts.

Evolution and Present Development of the Turbine Pump. Paper before Institution of Mechanical Engineers. By Dr. Edward Hopkinson and A. E. L. Chorlton. Illustrated, 4 1-2 pp., Water, Feb. 15. 25 cts.

Automatic Water Supply Booster in Use at Dusseldorf. By C. A. Tupper. Illustrated, 1 2-3 pp., Engineering News, Feb 8. 15 cts.

Anchor Ice on the Two-Mile Intake Crib, Chicago, Fighting. Illustrated, 1-2 p., Engineering Record, Feb. 17. 10 cts.

Meters at the Wachusett Dam, Special Venturi. By E. R. B. Allardice and F. N. Connet. Illustrated, 1 1-2 pp., Engineering News, Feb. 15. 15 cts.

Pressure Reducing and Regulating Device, Water. By S. Whinery. Illustrated, 1-2 p., Engineering Record, Feb. 10. 10 cts.

Purification Plant, Operation of the Kansas City Water. Illustrated, 1 p., Engineering Record, Feb. 17. 10 cts.

New Settling Basin of the Water Works at Kansas City. By Wynkoop Kiersted. Illustrated, 3 pp., Engineering News, Feb. 29. 15 cts.

Operating Results of the Mechanical Filters at Harrisburg. 1-3 p., Engineering Record, Feb. 24. 10 cts.

Clarkesburg Filtration Plant. 1-2 p., Fire and Water, Feb. 7. 10 cts.

Operation Results of the Slow Sand Filters at Indianapolis. 1-3 p., Engineering Record, Feb. 10. 10 cts.

Sterilizing by Anhydrous Chlorine. Use of chlorine in gaseous form; apparatus used in experiments; efficiency and cost. Illustrated, 2 pp., Municipal Journal, Feb. 15. 10 cts.

Chloride Process for Water Purification. Paper before Indiana Sanitary and Water Supply Association. By W. B. Bull. 1 1-2 pp., Municipal Engineering, March. 25 cts.

New Communication Regarding the Treatment of Potable Water by Ultra Violet Rays. By Dr. Schwarz and Dr. Auman. Illustrated, 10 pp., La Technique Sanitaire, February. 60 cts.

Acid Conditions in the Monongahela River. 2 1-2 pp., Municipal Engineering, March. 25 cts.

Turbid Water of the Ohio Made Pure at Cincinnati. By A. M. Evans. 2-3 p., Fire and Water, Feb. 14. 10 cts.

Disease, Water and. By A. C. Houston. 8 pp., Journal of State Medicine, Official Journal of the Royal Institute of Public Health, February. 60 cts.

Chicago Water Works, Report on. 1-4 p., Municipal Journal, March 7. 10 cts.

Boston Working on High Pressure System. 2-3 p., Fire and Water, Feb. 14. 10 cts.

Management of Water Plants in the Smaller Cities. Paper before Indiana Sanitary and Water Supply Association. By E. L. Loomis. 3 pp., Municipal Engineering, March. 25 cts.

STREET LIGHTING & POWER PLANTS

Street Lighting, Electric. Selection of type of lamp adapted to individual purposes; height above street surface; effect of reflectors and globes; calculations of annual costs of lamps under various conditions. Illustrated, 3 pp., Municipal Journal, Feb. 29. 10 cts.

Methods of Lighting Streets. From Bulletin, University of Illinois. By J. M. Bryant and H. G. Hake. 2 pp., Engineering and Contracting, Feb. 7. 10 cts.

Modern Street Lighting and City Growth. Value of ornamental systems to municipalities. Paper before American Civic Association. By C. L. Eschleman. Illustrated, 3 pp., Public Service, March. 20 cts.

Modern Street Lighting. Paper before American Civic Association. By C. H. Eshleman. Illustrated, 5 pp., American City, February. 15 cts.

Concrete Lamp Standard. Illustrated, 1-4 p., Municipal Journal, March 7. 10 cts.

Gas, Suburban Distribution of High Pressure. By H. H. Jones. 2 pp., Progressive Age, Feb. 15. 20 cts.

Flow of Gas in Mains. Paper before American Gas Institute. Illustrated, 7 pp., American Gas Light Journal, March 4. 10 cts.

Worcester Gas Affairs. 2 pp., Progressive Age, March 1. 20 cts.

Electric Utilities. Benefit to communities; factors in electric service rates; Municipal Ownership features. By C. N. Duffy. 5 1-2 pp., Public Service, March. 20 cts.

Contracts for the Supply of Electric Power from the Power Users' Point of View. By H. E. M. Kensit. 1 1-2 pp., Canadian Engineer, Feb. 8. 15 cts.

Power Plants of the Southern Indiana Power Company. Paper before Indiana Engineering Society. By D. V. Moore. Illustrated, 2 1-2 pp., Engineering Record, Feb. 10. 10 cts.

The Value of Water Power. 2-3 p., Engineering Record, Feb. 17. 10 cts.

Electric Power Station of the Bury Corporation, England. Illustrated, 2 pp., Municipal Journal (London), Feb. 10. 15 cts.

Hydroelectric Plant at Marseilles. Illustrated, 2 pp., Engineering Record, Feb. 24. 10 cts.

Municipal Hydroelectric Plant. Replacing steam by water power in the city of Sturgis, Mich. By L. E. Ayres. Illustrated, 2 pp., Engineering Record, March 2. 10 cts.

The Snell Hydroelectric Development on Raquette River, New York. Illustrated, 2 pp., Engineering Record, Feb. 17. 10 cts.

Surface Combustion. Illustrated, 2 pp., Progressive Age, Feb. 15. 20 cts.

Meaning of "Actual Station Operating Costs." 1 p., Engineering Record, Feb. 17. 10 cts.

FIRE AND POLICE

Fire Hazard at Lansing. From National Board of Fire Underwriters. 1 p., Fire and Water, Feb. 21. 10 cts.

Lack of Water at Canton Increases Fire Hazard. 1 1-3 pp., Fire and Water, Feb. 14. 10 cts.

Conflagration Hazards at Madison, Wis. From report of the National Board of Fire Underwriters. 1 1-3 pp., Fire and Water, Feb. 7. 10 cts.

Fire Waste, The Folly of, and How We Can Reduce It. By A. Lindback. 4 pp., Western Municipal News, March. 10 cts.

Fireproof Buildings, Why Firemen Fear. By T. J. McKeon. Illustrated, 2 pp., Fire and Water, Feb. 28. 10 cts.

Putting Out Fire, Science and Chemistry of. By G. P. Service. 2-3 p., Fire and Water, Feb. 14. 10 cts.

Alarm Box at Oakland, Cal., Ornamental. Illustrated, 1-4 p., Municipal Journal, Feb. 15. 10 cts.

Criminals, Bertillon System of Identifying. Paper before League of Nebraska Municipalities. By Chief J. J. Donahue. 2 pp., City Hall, March. 25 cts.

GOVERNMENT AND FINANCE

Municipal Government in the Far East. By H. N. Shephard. 1 1-2 pp., Citizens' Bulletin, Cincinnati, Feb. 10. 5 cts.

A Participating Commission Plan of Government. By G. H. Murdoch. 5 pp., American City, February. 15 cts.

Public Welfare, A Board of. 1-3 p.,

Municipal Journal, March 7. 10 cts.

Election Laws of Iowa, Municipal. By A. W. Osborne. 4 pp., City Hall, March. 25 cts.

Civil Service in Massachusetts. 1 p., Fire and Water, Feb. 21. 10 cts.

Municipal Ownership in England. Many city plants displaced by private companies. By Glen Marston. 2 pp., Public Service, March. 20 cts.

Public Service Industries, Some Criteria of Value in. By C. P. Fowler. 16 pp., Engineering Magazine, March. 25 cts.

The Public Gains When Public Utility Companies Are Financial Successes. By T. P. Shonts. 1 1-2 pp., Public Service, March. 20 cts.

Intangible Assets of Public Utilities. By N. I. Garrison. 2 pp., Public Service, March. 20 cts.

New York Public Utilties. By T. H. Whitney, Secretary Public Service Commission. 1 1-2 pp., Public Service Regulation, February. 25 cts.

Commissions, Work of Public Service. Address before City Club of St. Louis. By J. E. Allison, Chief Engineer, St. Louis Public Service Commission. 3 1-2 pp., Public Service, March. 20 cts.

Kansas Commission Rules Against Competition. 1 p., Public Service, March. 20 cts.

Georgia Commission Rules in Matter of Improved Service and Reduced Fare on Electric Railways. 2 pp., Public Service Regulation, February. 25 cts.

Motion Pictures, National Board of Censorship of. Report to Recreation Alliance of New York City. By John Collier. 2 pp., Playground, March. 25 cts.

Height of Buildings, Regulations for the. By C. H. Alden. 2 pp., Pacific Builder and Engineer, Feb. 10. 15 cts.

Municipal Limitations on the Height of Buildings. 1-2 p., Engineering News, Feb. 15. 15 cts.

Cost Accounting, Municipal. 1-4 p., Municipal Journal, March 7. 10 cts.

Classified Expense Accounts. Fundamental principles and classification; some accounting fallacies; checking accounts; economies. 1 1-2 pp., Municipal Journal, March 7. 10 cts.

Inspection and Cost Data in Relation to City Improvements. Paper before Indiana Engineering Society. By F. O. Hodson. 1 p., Engineering and Contracting, Feb. 28. 10 cts.

REFUSE DISPOSAL

Street Cleaning, Pneumatic. Paper before Indiana Engineering Society. By C. A. Tripp. Illustrated, 4 pp., Municipal Engineering, March. 25 cts.

Garbage Collection in Milwaukee. Collectors hired by the day; amounts collected; time consumed; weight of garbage; night collections. 1 p., Municipal Journal, Feb. 29. 10 cts.

Automobile Garbage Wagon. By H. L. Quigley. Illustrated, 3-4 p., Municipal Journal, Feb. 15. 10 cts.

Garbage Disposal in Connecticut. 1-3 p., Municipal Journal, March 7. 10 cts.

Refuse Disposal, Toronto, Ont. 4 pp., Engineering News, Feb. 22. 15 cts.

Destruction of House Refuse by Incineration. By R. R. Knight. 3 1-2 pp., Canadian Engineer, Feb. 8. 15 cts.

Waste Utilization in Pittsburgh. 1-4 p., Municipal Journal, Feb. 29. 10 cts.

Fertilizer Manufactured by City. Work done by Los Angeles Park Department. 1-2 p., Municipal Journal, Feb. 22. 10 cts.

TRAFFIC AND TRANSPORTATION

Motor Trucks.—The New Freighters. Quicker and more reliable service; cleaner and less congested cities; concrete examples of saving. By R. W. Hutchinson, Jr. Illustrated, 15 pp., World's Work, January. 25 cts.

Solid and Pneumatic Tires. 1-4 p., Municipal Journal, March 7. 10 cts.

Street Railway System of Calgary. By T. H. McCauley. 1 1-2 pp., Western Municipal News, March. 10 cts.

Subway Equipment Improvements. Illustrated, 7 1-2 pp., Engineering News, Feb. 29. 15 cts.

New York's First Subway. 2-3 p., Engineering Record, Feb. 10. 10 cts.

First Shield Driven Tunnel in America. Early history of New York subways. 1 p., Engineering News, Feb. 15. 15 cts.

Tunneling Under the Brooklyn Subway. 2-3 p., Engineering Record, March 2. 10 cts.

Lowering a Chicago River Tunnel. By Wm. Artingstall. Illustrated, 2 2-3 pp., Engineering News, Feb. 8. 15 cts.

Track Elevation Work, Cost of Concrete Abutments and Pedestals on, Where Lack of Room Made Construction Difficult. By C. G. Huestis. 1 p., Engineering and Contracting, Feb. 21. 10 cts.

STRUCTURES AND MATERIALS

Cement Production in 1911, American Portland. 1-2 p., Engineering Record, Feb. 10. 10 cts. 1-4 p., Municipal Journal, March 7. 10 cts.

Concrete, Proportioning and Mixing of. By Jerome Cochran. 4 pp., Engineering and Contracting, Feb. 7. 10 cts.

Uses and Misuses of Concrete. Paper before Indianapolis Architects Association. By D. E. Moore. 2 pp., Cement Era, February. 10 cts.

Discussion of the Economics of Practical Concrete Construction. Paper before Indiana Engineering Society. By D. V. Moore. 2 pp., Engineering and Contracting, Feb. 14. 10 cts.

Methods and Costs of Proportioning Gravel Concrete. Paper before Illinois Society of Engineers and Surveyors. By Clifford Older. Illustrated, 2 1-2 pp., Engineering and Contracting, Feb. 14. 10 cts.

Effective Type of Expansion Joint for Concrete. By J. W. Link. Illustrated, 1-2 p., Engineering Record, March 2. 10 cts.

Inspection of Forms and Centering. By Jerome Cochran. 5 pp., Engineering and Contracting, Feb. 21. 10 cts.

Rehandling of Concrete Materials. By D. J. Hauer. Illustrated, 3 pp., Contractor, Feb. 15. 20 cts.

Should Engineers for Concrete Structures Design the Framework? 1-2 p., Engineering and Contracting, Feb. 14. 10 cts.

Inspection of Steel Reinforcement. By Jerome Cochran. 3 pp., Engineering and Contracting, Feb. 28. 10 cts.

Clay Products Exposition. 1-4 p., Municipal Journal, Feb. 22. 10 cts.

Timbers, Strength Values for Structural. 2 pp., Engineering News, Feb. 22. 15 cts.

Bridges, Cost of Concrete Highway. By B. H. Piepmeier. Illustrated, 2 1-2 pp., Engineering News, Feb. 8. 15 cts.

The Saybrook Bridge on the Connecticut River. Paper before Connecticut Society of Civil Engineers. By E. W. Bush, chief engineer. Illustrated, 1 2-3 pp., Engineering Record, Feb. 17. 10 cts.

St. Louis Municipal Bridge. Illustrated, 10 pp., Engineering News, Feb. 8. 15 cts.

New Manhattan Station of the Brooklyn Bridge. Illustrated, 1 p., Engineering News, Feb. 22. 15 cts.

Weak Points in the Construction of Small Steel Highway Bridges. Paper before Illinois Society of Engineers and Surveyors. By N. B. Garver. 1 p., Engineering News, Feb. 15. 15 cts.

Preliminary Studies in Bridge Design. By Reginald Ryves. Illustrated, 2 1-2 pp., Surveyor, Feb. 23. 40 cts. Illustrated, 3 pp., Surveyor, Feb. 16. 40 cts. Illustrated, 3 pp., Feb. 9. 40 cts.

Concrete Highway Bridges. Reinforced concrete, fire and rust proof; types of various spans; principles of design. Paper before Minnesota Engineers' Society. By G. H. Herrold. 1 p., Municipal Journal, Feb. 29. 10 cts.

Specifications and Cost of Replacing Wood Floors with Reinforced Concrete for Highway Bridges. By L. C. Smith. 1 p., Engineering and Contracting, Feb. 14. 10 cts.

Central Avenue Bridge at Rochester. A reinforced concrete structure combined with a concrete dam and headwork for power development built under unusual conditions. Illustrated, 2 pp., Engineering Record, March 2. 10 cts.

Repairing a Substructure of the Bangor-Brewer Bridge. By E. E. Greenwood. 1 p., Engineering Record, Feb. 24. 10 cts.

Waterproofing Concrete Slab Railroad Bridges Over Streets. 1-2 p., Engineering Record, March 2. 10 cts.

Reinforced Concrete Bridges at Port Arthur. By L. M. Jones. Illustrated, 4 pp., Canadian Engineer, Feb. 15. 15 cts.

Cost of Concrete Highway Bridges. Paper before Illinois Society of Engineers. By B. H. Piepmeier. Illustrated, 3 1-2 pp., Contract Record, Feb. 21. 20 cts.

City Hall, Chicago. Illustrated, 10 pp., Architecture and Building, January. 20 cts.

Dock, Reinforced Concrete, in New York Harbor. 1-2 p., Engineering Record, March 2. 10 cts.

MISCELLANEOUS

Town Planning, Three Essentials in. Paper before Manchester Conference. By W. H. Lever. 2-3 p., Engineering News, Feb. 8. 15 cts.

The Landscape Architect and the City Engineer. By Stephen Child. Illustrated, 6 pp., American City, February. 15 cts.

Civic Center for New York. 1 p., Engineering News, Feb. 22. 15 cts.

Converting Jones-Falls Into Fallsway Boulevard. Illustrated, 2 pp., Manufacturers' Record, Feb. 29. 50 cts.

City Plots in Michigan, Instructions for Making and Filing. Abstract of pamphlet issued by Auditor General's Department. 1 p., Engineering and Contracting, Feb. 21. 10 cts.

City Surveyor's Record. By N. H. Smith, city engineer, Oshkosh, Wis. 1-3 p., Municipal Journal, Feb. 15. 10 cts.

Playground, The Street as. By Howard Bradstreet. 3 pp., Playground, March. 25 cts.

Municipal Gymnasia. Paper before New England Recreation Institute. By Prof. D. A. Sargeant. 1 1-2 pp., Brookline Chronicle, Feb. 17. 5 cts.

Street Play. By J. P. Petrie. 6 pp., Playground, March. 25 cts.

Parks, Playgrounds and Boulevards of a City. Their development for Greater Seattle and their bearing on municipal life. By V. G. Bogue, 2 1-2 pp., Pacific Builder and Engineer, Feb. 10. 15 cts.

Shade Trees, Municipal Control of. From address before American Civic Association. By Wm. Solotaroff. 2 pp., American City, February. 15 cts.

Smoke Investigation at Pittsburgh. 1-4 p., Municipal Journal, Feb. 29. 10 cts.

Raising a Town Eight Feet. Illustrated, 1-2 p., Municipal Journal, Feb. 29. 10 cts.

Chimes for Springfield, Municipal. Illustrated, 1-3 p., Municipal Journal, March 7. 10 cts.

Streets, Public Rights in. 1-2 p., Municipal Journal, Feb. 15. 10 cts.

Moving Houses in Streets. Right of municipalities to regulate the use of streets for this purpose; rulings of courts in various States. By John Simpson. 1 1-2 pp., Municipal Journal, March 7. 10 cts.

Models, Use of, by Municipal Departments. Purposes for which they may be used; materials; cost of construction. By J. H. O'Neill. Illustrated, 3 pp., Municipal Journal, Feb. 15. 10 cts.

Statistical Chart Published by the Municipality of Nagoya, Japan. 4 pp., Citizens' Bulletin, Cincinnati, Feb. 10. 5 cts.

Construction Work During 1911. Data from 33 cities. 1 1-4 pp., Municipal Journal, March 7. 10 cts.

Motor Trucks for Contractor's Service. Illustrated, 3 1-2 pp., Engineering and Contracting, Feb. 7. 10 cts.

Coal, Purchasing, by Heat Units. Twenty cities use system; specifications regarding calorific value; ash, sulphur and moisture; deductions for deficiencies. 1 1-2 pp., Municipal Journal, March 7. 10 cts.

Library Science as an Adjunct to Engineering. By L. B. Krause. 1 2-3 pp., Engineering Record, March 2. 10 cts.

Retaining Walls, Some Observations on. Paper before Kansas Engineering Society. By Prof. L. E. Conrad. 1 p., Engineering Record, Feb. 17. 10 cts.

Concrete Retaining Wall Failure. Illustrated, 2 pp., Engineering News, Feb. 29. 15 cts.

New Type of Retaining Wall. 1 p., Engineering News, Feb. 15. 15 cts.

Engineer, The Evolution of the. Presidential address before Institute of Sanitary Engineers. By A. J. Martin. 1 1-2 pp., Surveyor, Feb. 9. 40 cts.

Opportunities of the Engineer in Public Service. Paper before Los Angeles Branch, American Institute of Electrical Engineers. By J. A. B. Scherer. 2 pp., Engineering News, Feb. 8. 15 cts.

Contracting Practice. Examples of cost analyses charts. By D. V. Moore. Illustrated, 4 pp., Municipal Engineering, March. 25 cts.

Specification and Agreement Writing. Principles of. By C. R. Young. 2 1-2 pp., Canadian Engineer, Feb. 8. 15 cts. 3 pp., Canadian Engineer, Feb. 22. 15 cts.

Contractor's View of City Contracts. Discussion of paper before Municipal Engineers of the city of New York. 5 pp., Bulletin of the General Contractors' Association, February.

Explosives, Portable Magazines for Storage of. Methods of thawing dynamite. Illustrated, 2-3 p., Engineering and Contracting, Feb. 21. 10 cts.

A Blast Which Moved 400,000 Cubic Yards of Rock. Illustrated, 2-3 p., Engineering Record, Feb. 24. 10 cts.

The Rate of Burning of Fuse. From technical paper No. 6, Bureau of Mines. By W. O. Snelling and W. C. Cope. 3 pp., Engineering and Contracting, Feb. 14. 10 cts.

Handling of Blasting Fuses. 1-3 p., Engineering Record, Feb. 10. 10 cts.

Lakes, Uses and Levels of the Great. Communication from F. G. Ray. 1 p., Engineering News, Feb. 22. 15 cts.

NEWS OF THE SOCIETIES

Association of Mayors of the State of Maryland

Mayors of nearly every incorporated town in Maryland, at a meeting in the State Capitol at Annapolis, March 6, joined unanimously in the good roads movement for the improvement of highways throughout the State. Only two counties, Baltimore and Calvert, were unrepresented. There were 60 mayors at the meeting.

The purpose of the meeting was to discuss and approve the bill presented by Senator Dodson for construction of State roads through incorporated towns and villages of the State. The mayors unanimously approved the plan and recommended that the State Board of Roads and Ways be instructed to turn over to the towns that had a road equal to or better than the road which the State would build a sum equal to the cost of building this road.

A motion was unanimously carried to make the organization a permanent body, to be known as the Association of Mayors of the State of Maryland, its membership to consist of the mayors now holding office and those elected in the future. Its object will be to discuss plans of improvements to roads, installation of water, sewerage, etc., changes in charters, advancement of the towns, and to work with the State's Trade Association in advancing the interests of the State. Mayor Plant, of Mount Rainer, was appointed by the chairman to frame by-laws, which will be submitted to a committee to be appointed by the chairman.

New Jersey State Association of Police Chiefs

A meeting was held in the aldermanic chambers, Elizabeth, March 4. Nearly every city and town in the State was represented, there being more than fifty members present. President Edward Nugent, of the Board of Aldermen, made the address of welcome. Chief George C. Tenney, Elizabeth, president of the organization, presided.

In opening, Chief Tenney explained briefly the purpose of the association. He said that it was patterned after the International Association, which had been organized for eighteen years, and which had been responsible for promoting much harmony between the United States and Canada in police business. He said that the idea of the State Police Chiefs' Association was to create a State-wide police department. He continued by saying that it had been discussed among the chiefs for more than two years, and that he had always been in favor of its organization, if organized properly. This he said he believed had now been done.

Major Richard Sylvester, Superintendent of Police, Washington, D. C., and president of the International Association of Chiefs of Police, was the guest of honor. Speaking on "Police Organization" he told of the growth of the international association and what it had accomplished, saying that from fifty it had now passed the 300 mark, and said that if it had accomplished nothing else it had served to do away with much of the red tape between States and countries.

He said that the association had introduced the Bertillon system into America, from which it was possible to spin a web from which no criminal could escape. He said that there were many who decried photography and the metric system of measurement and who put up the cry of constitutional rights, but he said that the man who violates the law fears when he knows his prints and measurements are in the hands of the police. He said that the lawless outbreak in New York was due to the abandonment of photography in that city, and said that criminals were coming to regard New York as a wide-open town.

Brooklyn Engineers' Club

"Engineers as Public Health Officers" was the subject of the informal library talk held February 29 at the Brooklyn Engineers' Club, 117 Remsen street, the principal speaker being M. N. Baker, editor of the *Engineering News* and president of the Board of Health of Montclair, N. J. Others who participated in the general discussion were Prof. George C. Whipple, who occupies the chair of Sanitary Engineering at Harvard, and W. R. Copeland, an expert of the Metropolitan Sewerage Commission. Mr. Baker said in part: "It is surprising to see how little of the health-protective work is medical and how much is enginering in character. Pursued to a logical conclusion, such an analysis would at least lead to the selection of an engineer for one of the leading administrative positions on the board of health of every city of considerable size, if it did not put an engineer at the head of the administrative work. A possible alternative, and one which some years hence will probably be largely adopted, is the transfer of much of the work now done more or less indifferently by boards of health to city departments already headed or guided by engineers.

Boston Society of Civil Engineers

One hundred and fifty members attended the dinner of the Boston Society of Civil Engineers, held at the City Club February 28, when Baurat Wendemuth, the Hamburg dock expert, and his secretary, August Hartong, were guests. Herr Wendemuth described Hamburg's development in a general way, and his secretary went into the details of some features. F. W. Hodgdon, chief engineer of the Harbor and Land Commissioners, pointed out many points of difference between Hamburg and Boston, and compared the method of handling merchandise here with that employed at Hamburg and at Manchester, Eng.

John R. Freeman, former president of the society, described the Alste Basin at Hamburg, likening it to the Charles River Basin. He said that Boston deserves to be congratulated upon the action of the Technology in locating on the Cambridge side of the Basin. Otis F. Clapp, city engineer of Providence, described the work which is planned for the development of Providence harbor, and William T. Donnelly, of New York, who has been engaged in dock work in the Northwest, discussed this development, both on the Northern Pacific coast and in New York. Chas. T. Main, president of the society, acted as toastmaster.

PERSONALS

DONIGAN, J. I., Alexander City, Ala., has been appointed new State engineer.

DURHAM, HENRY W., New York City, has been appointed chief engineer of the Bureau of Highways. Mr. Durham is now in charge of construction work on the Cape Cod Canal. He is a graduate of the Columbia School of Mines and for four years served as assistant engineer in charge of construction of one of the sections of the subway.

HUDSON, DAVID M., Chelsea, Mass., has been appointed chief of the fire department, and will succeed Henry A. Spencer, the present chief, who will be retired on a pension.

KOEFF, CHAS F., Huron, S. D., has tendered his resignation as mayor, in which office he has served the city for the past two years.

MCLAUGHLIN, JAMES F., Philadelphia, Pa., chief of the Electrical Bureau for the past four years, has resigned.

MCCLURE, WILBUR F., Berkeley, Cal., has been appointed State engineer.

PATTERSON, WM., Owosso, Mich., has been appointed chief of police.

QUIMBY, HENRY H., Philadelphia, Pa., has tendered his resignation as assistant engineer in the bridge division of the Bureau of Surveys, to take effect March 1, when he will become associated with John G. Brown, a designer and builder of manufacturing plants.

SANDRETH, PROF. OLIN H., Schenectady, N. Y., expert sanitary engineer, recently made a visit to Owego to study the sewer proposition in that city. He will present a report to the Sewer Commission.

STEWARD, HARRY M., Boston, Mass., roadmaster of the elevated division of the Boston Elevated, has been appointed chief engineer of maintenance of way.

SEBASTIAN, CHIEF OF POLICE, Los Angeles, Cal., has been appointed a member of the legislative committee of the Internatonal Association of Chiefs of Police.

WESTFIELD, WM. R., New York City, has been appointed assistant superintendent of buildings.

WHITE, JAMES F., Chelsea, Mass., has been made head of the police department.

Calendar of Meetings

March 11-16.
National Association of Cement Users.—Annual Convention, Kansas City, Mo.—Edward E. Krauss, Secretary, Harrison Building, Philadelphia, Pa.

March 14-21.
First Annual Kansas City Cement Show—Convention Hall.—J. P. Beck, General Manager Cement Products Exhibition Co., 72 W. Adams St., Chicago.

March 28-29.
American Society for Testing Materials.—Annual Meeting, New York City.—Edgar Macbury, Secretary, University of Pennsylvania, Philadelphia, Pa.

April 16-17.
Tri-State Water and Light Association of the Carolinas and Georgia.—Annual Meeting, Salisbury, N. C.—J. W. Neave, Secretary, Salisbury, N. C.

June 3-8.
American Water Works Association.—Annual Convention, Louisville, Ky.—John M. Diven, Secretary, Troy, N. Y.

June 10-12.
Mayors Conference of New York.—Third Annual Meeting, Utica, June 10-12.—Mayor C. C. Duryee, President, Schenectady, N. Y.—C. C. Capes, Secretary, New York.

MUNICIPAL APPLIANCES

High Power Sprayer

The Fitzhenry-Guptill Co., 49 North Washington street, Boston, Mass., manufacture high-power spraying outfits suitable for municipal use. The advantages of spraying have become generally known within the past few years. Municipal spraying is an acknowledged necessity in about all New England cities and many cities in other parts of the country. The essential requirement of a spraying machine is the ability to break up the arsenical compounds and fluid fungicides into a fine mist-like spray that will settle lightly upon the foliage and yet with sufficient force and quantity to thoroughly coat the leaves and fill the innermost crevices.

In extensive woodland spraying this is accomplished by what is termed "solid stream" spraying, which is to force from a straight bore nozzle, varying in size according to the height of the trees to be sprayed, a stream with sufficient force to thoroughly break it into a mist after the height is attained, or a nozzle with a fine hole is used to break up the fluid immediately after leaving the tip that a greater surface may be covered at close range with the least amount of solution. A pressure as great as 350 pounds must sometimes be used. The Fitzhenry-Guptill size A outfit delivers 33 gallons per minute at 350 pounds pressure, this being sufficient to properly supply a ¼-inch tip on their improved Worthley nozzle at the end of 1,500 feet of hose. It consists of a "U" shaped pine tank of 400 gallons capacity with a detachable cab, covered on top with best oiled duck and detachable curtains, of the same material, to protect the machinery, which are mounted on a platform, cut under, 2-horse spring gear with compound brakes and 5-inch tread Sarven wheels made from New England air-dried stock, ironed throughout in the regular caravan style with Norway iron and steel, hand forged, painted three coats, striped, lettered and varnished and equipped with their special 3½-inch bore x 3¾-inch stroke phosphor bronze triplex pump of cylindrical design, with poppet valves of extra large area to permit of high speed when filling.

This pump also has raised stools in the plunger, which always brings the wrist-pin thrust between metal guides, and individual ports through which the valve can be removed by simply unscrewing a cap. The pump is operated by a 4-cylinder, 4-cycle, 10-14-horsepower gasoline engine of special design, with Bosch magneto and mechanical oiler, and is connected to the pump by their 1912 clutch with phosphor bronze piston. The engine is cooled by a coil submerged in the solution tank and is connected to a supply tank fitted with a glass water gauge. The gasoline tank is made of extra heavy galvanized iron, holding sufficient fuel for a two days' run. The mixer is of special design, consisting of wooden paddles mounted on bronze blades keyed to a Tobin bronze shaft and driven directly from the engine by a transmission gear arrangement running in an oil bath. A hydraulic pressure gauge is so placed as to be easily read by the operator. Their special safety release valve, which exhausts back into the solution tank from the delivery line, does not raise the pressure when the nozzles are closed off. The air chamber is made of steel and, wherever the pipes are subjected to high pressure, they are of double strength, with extra heavy unions and fittings.

Lea High-Duty Turbine Pump

The field of the turbine pump, until within recent years a very restricted one, has of late been extended with utmost success to cover duties which were formerly considered exclusive to the reciprocating or plunger pump. The explanation of this widened field lies in a better understanding of the turbine pump possibilities on the part of engineers, leading to improvements in design and construction which have firmly established the efficiency and reliability of this type of pump in almost all classes of service.

Among the many advantages of the turbine pump may be mentioned extreme simplicity, resulting from the absence of any valves or sliding parts; extreme compactness, made possible by the high speeds used; low cost per unit of discharge capacity, also resulting from the high rotative speed; and adaptability to such modern high-speed prime movers as the electric motor or the steam turbine.

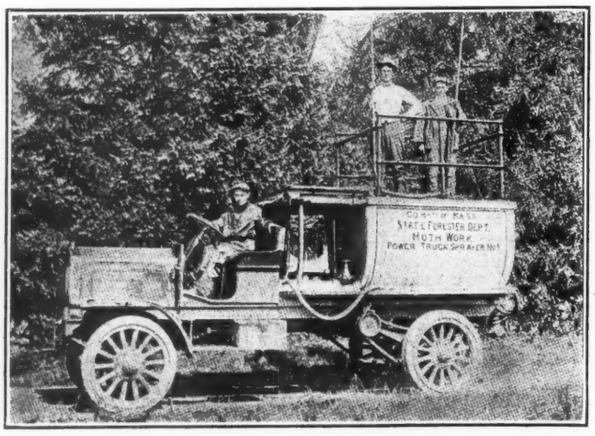
The Lea Equipment Company, New York, manufacture a high-duty turbine pump shown in the illustration. The top and bottom section or casings each consist of a solid casting, carefully moulded and will all machined surfaces carefully fitted. The suction head is made in two separate castings. Owing to the difficulty of getting perfect castings where the return passages are made integral with the pump, the latter are cast separately and bolted to the frame over an accurately fitted tongue-and-groove joint which absolutely prevents any leakage from one stage to the next. The suction flange bears against the pump base, giving support against deflection due to the weight of the suction pipe. The lifting of the upper section at once exposes all working parts for inspection or adjustment.

The shaft is a solid forging of nickel steel, turned true and accurately ground on the parts within the journal boxes. The impellers are held by means of end nuts over individual keys. They are separated by bronze distance pieces which, with the bronze sleeves at the ends of the shaft and within the stuffing boxes, entirely protect the shaft from the fluid being handled by the pump.

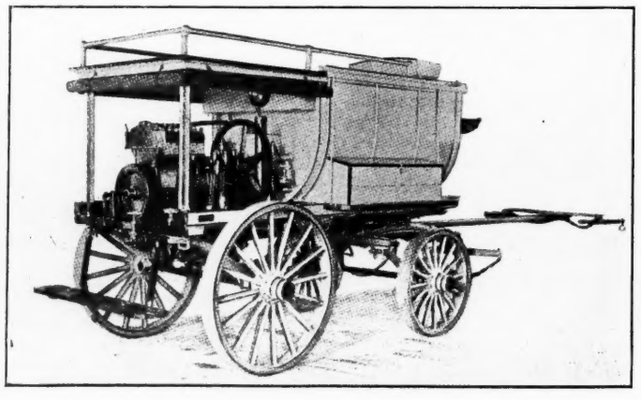
The shaft bearing boxes are of the vertically split type. They are of cast iron, finished all over and lined with babbitt metal hammered, bored and scraped. These boxes are made to standard gauge so that a worn one may be removed and a new one substituted at any time without any special adjustment or machine work. But owing to their generous proportions they will wear almost indefinitely where reasonable care in lubrication is exercised. The bearings are on separate pedestals or standards which can easily be removed without dismantling the pumps or opening the case.

For connection with the shaft of motor or turbine a flexible coupling is provided giving the necessary adjustability at high speeds. It consists of two flanges of ample size, one shrunk over a key on the driving shaft and the other on the pump shaft. In one flange are a number of steel pins, screwed in place on a taper, and these extend beyond the face of the flange, engaging holes in the other flange. These holes contain rubber cushions or bushings, with internal steel bushings which receive the pins from the opposite flange. The rubber bushings permit a certain amount of play affording the flexibility necessary in a long four-bearing shaft. Pins, nuts and heads are protected by an overlapping flange on the coupling.

While the pump itself is hydraulically balanced under normal conditions, possible end thrust due to abnormal conditions is taken care of by means of a



HIGH POWER SPRAYING OUTFIT MOUNTED ON AUTOMOBILE.

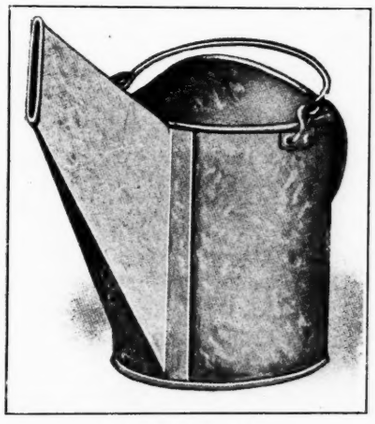


SPRAYING OUTFIT—THREE HUNDRED AND FIFTY POUNDS' PRESSURE.

thrust bearing of marine type. Between each pair of thrust collars is interposed a bronze oil ring giving an adequate supply of oil to all the bearing surfaces. The thrust bearing and the annular bearing at the other end of the pump are split vertically.

An examination of the illustration of the Lea high-duty turbine pump will reveal the extremely large size of the packing glands. These are not intended to receive the standard manufactured packings, which are entirely too hard for turbine pump service. The packing is of hand-plaited Japanese hemp, which can be prepared by the operator, and the large size of the packing space makes it possible to secure a watertight joint without excessive clamping of the packing, with increased friction. The packing is lubricated by means of a bronze ring which goes underneath the water-seal connection piped to the high pressure side of the pump. The packing glands are of bronze, and are of split type held together by collars fitting in grooves around the bolt hole.

These vital parts are of the enclosed type and are of cast iron or bronze, as the working conditions may require. The exterior is finished by turning so far as possible, and the interior is carefully filed and scraped to a true surface. Great care has been taken to properly balance the impellers. Grooved wearing rings fitted to the impellers come in close contact with the finished interior of the pump casing, so that leakage from one stage to the next is prevented. These rings can be renewed, when worn, at a slight cost.



TAR POURING CAN.

The Lea high duty pump has no diffusion vanes. This is in line with the best practise. For it has been proved that a diffusion vane is an advantage only when specifically designed for one good speed and one head only, and fails of useful effect under other conditions. Stock pumps using diffusion vanes seldom realize the advantages claimed for them, for this reason. The results of many tests have proved conclusively that there is no gain in efficiency by the use of diffusion vanes in a turbine pump for all-around service.

Both suction and discharge are attached below the center line of the pump, so that the upper casing can be removed without breaking the water connections. Care has been exercised in the design to make both suction and discharge passages of such shape as to offer the minimum resistance to the flow of water. The suction pipe is usually one size larger than the discharge.

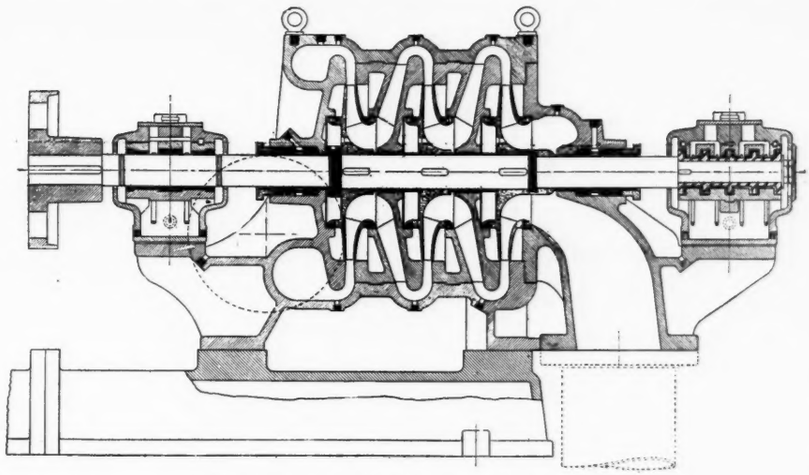


DIAGRAM OF LEA HIGH DUTY TURBINE PUMP.

The Lea high-duty turbine pump uses two different types of base or bed-plate, as preferred by the purchaser. One is a strong, rigid casting usually made in two sections which are joined between pump and prime mover. The other is built up of steel channels and cast-iron yokes on distance pieces, securely bolted together.

Tar Pouring Can

The Albany Belting & Supply Co., 372 Broadway, Albany, N. Y., manufacture a tar pouring can for bituminous road construction which has a peculiarly shaped nozzle The long, narrow outlet for the tar is at right angles to the position which it has in most cans of this kind The opening is parallel with the axis of the cylindrical can The effect of this in use is that the workman spreads the tar by swinging it sideways, the simplest way to swing it, instead of forward and backward, as is necessary with a can having the opening the other way This must be a convenience to the workman, as it keeps the hot tar further from him and saves him from breathing the pungent and irritating gases.

Atterbury Commercial Cars

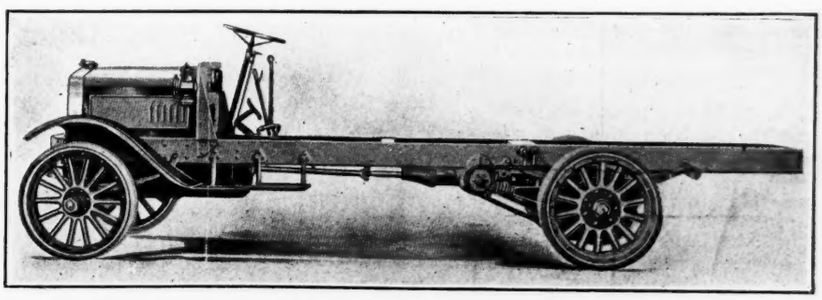
The Atterbury Motor Car Company, Buffalo, N. Y., claim to manufacture the most complete line of commercial cars in the United States. The use of motor wagons for general municipal purposes is increasing; hardly a week passes that some city does not advertise for a car, and presumably some are purchased without public advertisements. The following are general characteristics of their 1912 one, two and three-ton trucks: All machines are equipped with highly powered 4-cylinder, 4-cycle motors hung well in rear of the front axle, giving absolutely straight line drive and permitting low center of gravity. All have Bosch magnetos, double system of ignition and automatic governors, thus following the most approved and successful lines of European truck construction.

All machines have perfectly finished steel frames, cross members, gussets and braces hot riveted, steel dash guaranteed not to warp, and large loading space back of driver's seat. Radiators are of new type, ample capacity, of their individual design, and mounted on springs to prevent vibration. All machines are fitted with powerful double-acting internal expanding brakes of ample capacity in the drums of rear wheels, with Raybestos facing, properly protected and easily accessible.

One and two-ton machines have unit power plant, multiple disc clutch with center control. Three-ton truck is equipped with the well-known Hele-Shaw clutch. All machines have three speed and reverse selective type sliding gear transmission with nickel steel gears; the one and two-ton located immediately under the driver's feet; the three-ton swung under the frame, and all accessible without disturbing the load.

The new type of radius rods swivel on the rear axle with double universal action, absolutely relieving the machine of all strain. Heavy coil springs attached to the front end of radius rods start the load softly and gently, preventing shock to mechanism, reducing the cost of maintenance and prolonging the life of tires and entire machine.

In design, appearance, finish, efficiency, accessibility of working parts and low cost of upkeep these machines are claimed to be unequaled.



CHASSIS OF ATTERBURY THREE-TON COMMERCIAL WAGON.

INDUSTRIAL NEWS

Cast Iron Pipe.—Chicago—Quotations: 4-inch, $27; 6 to 12-inch, $25; 16-inch and up, $24.50. Birmingham—Business continues good with manufacturers of cast iron water pipe, and prices are reported a little more satisfactory than the figures on which most shipments were made in the last few months. There has been no increase in the rate of production, though the North Birmingham plant, which has been idle for some months, is being gotten in shape rapidly for operating, and one entirely new foundry, which is to operate on cast iron water pipe, is being constructed. The principal inquiries have been from smaller municipalities. Quotations: 4 to 6-inch, $23; 8 to 12-inch, $22; over 12-inch., average, $21. New York—The public pipe lettings now in sight in the East are for quite small quantities. Private buying has been comparatively light in the last few days. Quotations: 6-inch, car loads, $22 to $23.

Lead.—Conditions are unchanged in lead, the low prices fixed by the American Smelting & Refining Company continuing to dominate the market and the demand is quiet. The lead situation is likely to be seriously affected by news from the West. The lead field in southwest Missouri is threatened with a strike by the 5,000 employes of companies operating in that district, which is a very heavy producer of deep mined lead. The miners are preparing to demand an increase in wages approximating $1 per day. Conditions are said to have been bad in the field since the reduction in wages in 1907. Quotations: New York, 4c.; St. Louis, 3.95c.

Dryers.—The C. O. Bartlett & Snow Co., manufacturers of sand dryers and machinery for garbage reduction plants, Cleveland, O., has increased its capital stock from $60,000 to $500,000. The company has under consideration additions to its plant. The extent of these additions has not been decided on, but may include a foundry.

Centrifugal Pumps.—The Lea Equipment Company, manufacturer of high-duty centrifugal pumping equipment and the Lea-Simplex cold saws, which has heretofore had its general offices at 90 West street, New York, has found it necessary to enlarge its facilities to accommodate its growing trade, and has moved these offices to the works at the corner of Stenton and Wyoming avenues, Philadelphia, Pa. It will, however, retain quarters in the West street building, from which point the export and eastern trade will be served by the president, Albert G. Lea. The export department of the company has grown to such dimensions that it demands a separate selling department to properly conduct its extensive ramifications. The general sales offices, located at the works, will be under the supervision of H. R. Williams, general sales manager, who has been identified with a number of concerns in the same line of work.

Road Machinery.—The J. I. Case Threshing Machine Company, Racine, Wis., will begin as soon as the condition of the ground permits the erection of new manufacturing buildings involving an estimated expenditure of $1,500,000.

Recording Instruments.—Uehling Instrument Company, Passaic, N. J., have issued a bulletin which covers in condensed form the various types of recorders made by this company and the standard charts for use in connection with them. This line includes recorder for pressures up to 30 pounds per square inch, calibrated in either ounces, pounds or inches of water or mercury, recorders for light pressures and vacuums calibrated in inches of water, draft and differential gauges, vacuum gauges, revolution recorders, etc. The hydrostatic principle is employed in these instruments, and in this way the use of springs, levers and joint movements is avoided. Another advantage of the employment of this principle is that the scale can be open where readings are important and narrow where they are unimportant, an arrangement which utilizes the whole width of the chart for the important readings. In the type D recorder, which is a vacuum gauge for recording vacuums ranging from 20 to 30 or from 25 to 30 inches or any other desired range of similar length, the entire range is spread over a chart 8 inches in diameter.

Motor Truck Endurance Records.—Convincing evidence of long service for a motor truck is offered by the International Motor Company in the fact that the first Saurer truck, manufactured at Arbon, Switzerland, by Adolph Saurer as an experimental machine for transporting machines over the Alps in 1894, is still in active service at the Arbon plant. The 17 years' service is mentioned particularly because the depreciation factor, sometimes placed at 15 per cent., is widely regarded as indefinite owing to the short period of existence for the great majority of motor trucks now in use. Incidentally it is claimed, partly on the basis of the pioneer work of Adolph Saurer, that the Saurer and Mack trucks are the oldest in point of service of any machines on the market. It is not generally apprehended that the commercial motor vehicle has had an estimated growth in three years of at least 500 per cent. The International Motor Company also claims that the Mack truck built in Brooklyn in 1900 at the original plant, that of the Mack Bros. Motor Car Company, as a sightseeing bus constructed for Isaac Harris, Brooklyn, and used by him in Prospect Park, that city, has passed through a number of users' hands and for seven or eight years has continued its history as a passenger vehicle in service in large cities of the East. About four years ago it was sold by its owner to a firm in Tucson, Arizona, which converted it into a freight carrying vehicle, and to-day, after 12 years' service, this original Mack truck, it is stated, is still in active commission.

Pumps.—At the annual meeting of the board of directors of the Goulds Manufacturing Company, Seneca Falls, N. Y., held February 26, all the officers who have served the past year were re-elected. In the annual report on the business of the year a slight increase over the preceding year was shown in both the gross amount of sales and net profits.

The Care of Chains.—A valuable treatise on this subject, issued by the Jones & Laughlin Steel Company, Pittsburgh, Pa., is just off the press and is being distributed free among chain users. It is beautifully printed, in two colors, and supplies the information chain users need to show them how to get long life out of their chains. The most frequent cause for discarding chain, according to this booklet, is breakage, and that is usually due to crystallization. The booklet tells how crystallization can be overcome by a very simple home treatment process which will restore the chains to their original condition and make them useful for many months longer, thus effecting great economy.

Chemical Pumping Fire Engine.—Chief W. L. Loller, Youngstown, O., is quoted in an interview in the Youngstown Telegram as expressing a rather favorable view of the chemical fire engine exhibited recently by the Auto Chemical Fire Engine Co., Lansing, Mich. The machine is a pumping engine mounted on an automobile chassis and has a device by which soda is fed into the stream as it passes through the pumps. When the water thus charged comes in contact with the flames carbonic acid gas is formed, which smothers the fire. "In all apparatus," Chief Loller is quoted as saying, "in which soda is used a great per centage of the fire extinguishing capacity is lost owing to the use of sulphuric acid necessary to generate a pressure sufficient to throw the water. By the time the water reaches the nozzle much of its force is lost and the effect of the soda impaired. So far as known there is no chemical agency that has the fire extinguishing properties of common soda. It accomplished with much greater facility what water is supposed to do, that is, destroy combustion in the air. But it often happens in fighting a severe fire that much of the energy of the water is lost by its sudden conversion into steam, which in some instances actually feeds the flames by setting up other combustible gases. This new apparatus succeeds in combining all the desired qualities of water with those of soda and places them at the seat of trouble unimpaired in efficiency. The truck will be equipped with a supply store of 1,000 pounds of soda sufficient to keep it going for several hours. All that is necessary to do is to keep the hopper filled and with the aid of a small but powerful centrifugal pump it is forced into the stream and carried to the fire."

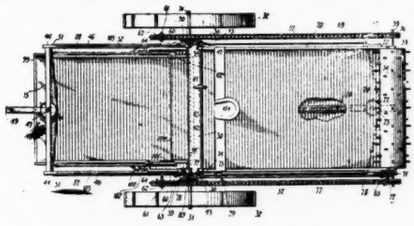
Steam Tables.—The Wheeler Condenser & Engineering Co., Carteret, N. J., has published a handbook of steam tables, with pressures below atmosphere expressed in inches of mercury referred to a 30-inch barometer. The booklet also includes a discussion of the use of the mercury column, the errors in such measurements and constants for their correction.

Street Cleaning Machine.—The Matchless Street Cleaner Company, of Glens Falls, N. Y., sole manufacturers of the Matchless Sanitary Horse Sweeping and Hand Cleaning Machines, has reorganized and moved its plant to Troy, N. Y. Albert E. Davis, for many years sales manager of the Covert Manufacturing Company, is the new president, and L. A. Jones, secretary and treasurer of the company.

PATENT CLAIMS

1,018,984. COMBINED LOADER AND SPREADER. Austin J. Parcels, Wetmore, Kan.—Serial No. 539,487.

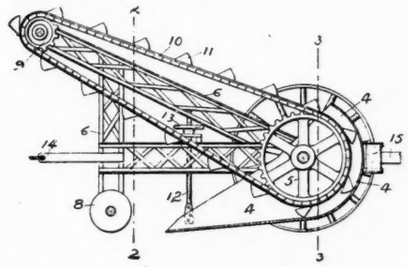
In a device of the kind described, a wheel supported body, means to raise and lower one end thereof, a loader at the



movable end, and a drive mechanism for said loader including a pair of members, arranged to engage when the body is lowered and disengaged when the body is raised.

1,018,672. DIRT-LOADER. William R. Litzenberg, Portland, Ore. Serial No. 615,135.

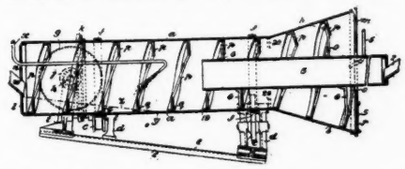
A dirt loader of the character referred to comprising carrier wheels with a carrier axle therebetween and adapted to turn therewith when moving forwardly, a scraper with bowl-like portion supported to said axle with its scraper portion extended forwardly thereof, a carrier frame, supported rearwardly upon said axle between the sides of said scraper and wheels and forwardly upon carrier wheels,



an endless conveyer mounted to travel upon said carrier frame and dipping into said scraper, means upon said axle for driving said conveyer, and means for moving said loader along behind a wagon or other vehicle to be loaded.

1,018,404. APPARATUS FOR WASHING STONE AND FOR MIXING MACADAM AND CONCRETE. William Henry Baxter, Harrogate, England. Serial No. 629,778.

In a machine, as specified, the combination of an inclined rotatable cylinder, rollers carried in supporting frame-work for supporting the cylinders, a mixing chamber provided at one end of the cylinder, screw-propeller blades fixed to the interiors of both the said cylinder and said mixing chamber, end pieces with central openings fixed to the cylinder and the mixing chamber, said mixing chamber having a discharge opening in its end



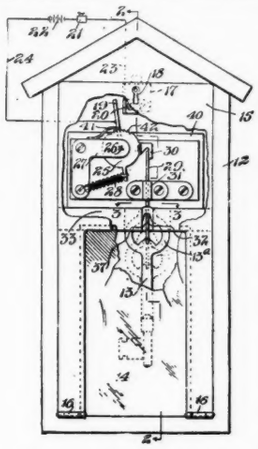
piece with a door for closing the same, and a central inner tube extending into the larger end of the mixing chamber and connected therewith.

1,017,650. WOOD PAVING BLOCK. James A. Cogswell, Boston, Mass. Serial No. 633,808.

As a new article of manufacture, the paving block herein described, consisting of a block having a kerf in its tread face, extending longitudinally with respect to the block from end to end thereof, a metal grid made of a thickness corresponding to the width of the block and of a depth greater than the depth of the kerf, and of a length less than the length of the kerf, said grid being fitted into the kerf so as to leave a space at one or both ends thereof, adapted to be filled with cement when arranged adjacent another block.

1,018,564. FALSE-ALARM DETECTOR FOR FIRE-ALARM SYSTEMS. Gilbert H. Inman, Brockton, Mass., assignor of one-fourth to John T. Stack, Brockton, Mass. Serial No. 620,710.

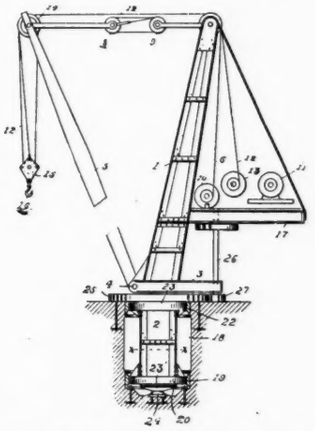
A fire alarm key container, circuit terminals therein, one of said terminals being a switch which is movable to close and break an electric circuit, means for automatically moving the switch to its circuit-closing position, a movable detent adapted to lock the switch in its circuit-breaking position, said detent being



adapted to engage a fire alarm key, and means for normally preventing the removal of the key from the detent when the latter is in its switch-locking position, the detent being displaceable from said position by the removal of the key.

1,018,529. DERRICK. Eric Swensson, Duluth, Minn., assignor of one-half to National Iron Co., Duluth, Minn., a Corporation of Minnesota. Serial No. 578,169.

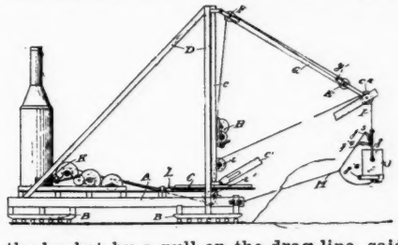
A derrick comprising a leaning mast, a boom pivotally mounted upon the mast and extending in a direction opposite to



the angle of the mast, and operating machinery wholly supported by the mast on the opposite side from the boom.

1,018,602. EXCAVATOR. Charles E. Bathrick, Chicago, Ill., assignor to Frederick C. Austin, Chicago, Ill. Serial No. 455,021.

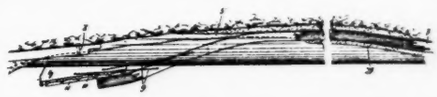
A drag-line bucket excavator provided with drag-line controlled locking mechanism adapted to be unlocked for dumping



the bucket by a pull on the drag-line, said drag-line having connection with a movable element of said mechanism.

1,018,578. METHOD OF TUNNEL CONSTRUCTION. James C. Meem, Brooklyn, N. Y., assignor of one-half to Frederick L. Cranford, Brooklyn, N. Y. Serial No. 646,885.

The method of constructing sub-aqueous tunnel, which consist in erecting from



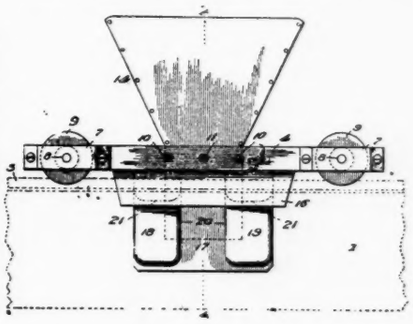
segmental longitudinal staves a continuous tunnel body above water and gradually sinking the same as erected.

1,018,360. AERIAL CABLE HOISTER AND CONVEYER. Joseph L. Potter, Indianapolis, Ind. Serial No. 621,226.

An aerial cable machine including two independently movable frames having each a tower removably mounted thereon, one of the frames having also a winding drum thereon, a cable extending from one to the other of the towers, a carrier movably mounted on the cable, and a cable connected with the winding drum and the carrier.

1,018,780. MACHINE FOR FORMING AND FINISHING CONCRETE AND CEMENT CURBS AND GUTTERS. Theodore Rauschenbach, Evansville, Ind. Serial No. 549,137.

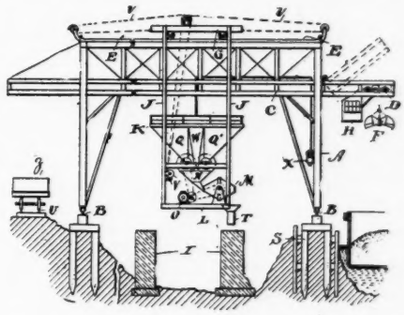
In a machine for smoothing and finishing curbs and gutters, the combination



with a movable hopper having a discharge mouth, of a pair of twin smoothers and finishers having relatively broad, flat bottoms and corresponding in shape to the outline of the curb and gutter and disposed below the hopper on opposite sides of and adjacent to the delivery mouth thereof and movable with said hopper and supporting means for said machine adapted to maintain the bottom of the smoother or finisher above a previously formed curb and gutter.

1,018,634. APPARATUS TO BE USED IN CONSTRUCTING CONCRETE WALLS, PIERS, ETC. John W. Seaver, Cleveland Heights, and James E. A. Moore, East Cleveland, Ohio; said Moore assignor to said Seaver; Mary T. P. Seaver, executrix of said John W. Seaver, deceased. Serial No. 397,828.

In an apparatus of the character specified, the combination of a supporting



frame movable horizontally in two directions, concrete mixing machinery supported upon said frame, mechanism for delivering the material to be mixed to the mixing mechanism, said mechanism being carried by the apparatus, and a spout secured to said frame in position to receive material discharged from said mixing mechanism.

THE WEEK'S CONTRACT NEWS

Relating to Municipal and Public Work—Street Improvements—Paving, Road Making, Cleaning and Sprinkling—Sewerage, Water Supply and Public Lighting—Fire Equipment and Supplies—Bridges and Concrete Work—Sanitation Garbage and Waste Disposal—Police, Parks and Miscellaneous—Proposals and Awards.

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also corrections of any errors discovered.

BIDS ASKED FOR

STATE		RECEIVED UNTIL	NATURE OF WORK.	ADDRESS INQUIRIES TO
			STREET IMPROVEMENTS	
Texas	San Antonio	Mar. 16, 11 a.m.	Grading Fredericksburg road	J. V. Huntress, County Aud.
Minnesota	St. Peter	Mar. 16, 10 a.m.	Constrn. State road No. 1	W. H. Holz, County Aud.
Massachusetts	Boston	Mar. 18, noon	Repairing artificial stone sidewalks	L. K. Rourke, Comm. Pub. Wks.
Kentucky	Louisville	Mar. 18, 2 p.m.	Constrn. sidewalks	R. G. McGrath, Sec'y Bd. Pub. Wks.
Pennsylvania	Salina	Mar. 16, 6 p.m.	**Pavg. road with brick**	L. J. Tussey, Sec'y Supervs.
Ohio	Mansfield	Mar. 18, noon	Grading road	A. E. Courtney, County Aud.
Michigan	Lowell	Mar. 18, 7.30 p.m.	Pavg. with brick and asphalted concrete	H. J. Taylor, Village Clk.; E. H. Christ, Engr., Grand Rapids.
New York	Long Island City	Mar. 18 11 a.m.	Furn. 125,000 gal. asph. r'd oil, furn. & spreadg. light r'd oil	M. E. Connolly, Boro. Pres.
Ohio	Elyria	Mar. 18, 1 p.m.	Grading street in Sheffield	County Comm.
Connecticut	Hartford	Mar. 18 11 a.m.	Furn. 150,000 gal. road oil	Jos. Buths, Sec'y Bd. Contract.
Minnesota	South St. Paul	Mar. 18, 8 p.m.	Improving street	J. R. Stevenson, City Record.
Canada	Welland, Ont.	Mar. 18, noon	Constrn. 37,000 sq. yds. asph., brick or bitulithic pavement	G. R. Boyd, Town Clk.
Minnesota	Luverne	Mar. 18	Constrn. 5½ miles State road No. 1	John Kelly, County Aud.
Ohio	New Philadelphia	Mar. 19, 1 p.m.	Pavg. and draining	W. C. Schott, County Aud.
Delaware	Wilmington	Mar. 19, noon	Constrn. about 6 miles stone roads	F. A. Price, Highway Comm.
Missouri	Columbia	Mar. 19	Constrn. brick pavement	J. R. Ellis, City Engr.
Ohio	Bowling Green	Mar. 19, 1 p.m.	Macadamizing 5 roads	C. E. Stinebaugh, County Aud.
Ohio	Cleveland Hghts.	Mar. 19	Pavg. Superior street with brick, asphalt or macadam	H. H. Canfield, Town Clk.
Wisconsin	Milwaukee	Mar. 20, 10.30 a.m.	Constrn. bit. pavement	H. E. Briggs, Comm. Pub. Wks.
Arkansas	Little Rock	Mar. 20, 2 p.m.	Gradg., graining and paving with vit. brick, asph, asphaltic concrete, creosoted rocks or bit. pavement on concrete foundation about 14 blocks	Bd. St. Imps., Dist. No. 186.
New York	Brooklyn	Mar. 20, 11 a.m.	Pavg. with asphalt and laying sidewalks	A. E. Steers, Boro. Pres.
Indiana	Ft. Wayne	Mar. 21 7.30 p.m.	Pavg. a number of streets	F. T. Benoym, Chm. Bd. Pub. Wks.
Wisconsin	Neenah	Mar. 21, 2 p.m.	Pavg. Wisconsin avenue	J. P. Keating, Sec'y Bd. Pub. Wks.
New York	Geneseo	Mar. 22, 8 p.m.	Paving Court street	W. D. Shepard, Village Clk.
West Virginia	Bluefield	Mar. 22, noon	Pavg. with bit macadam a number of streets	Board of Affairs.
Kansas	Emporia	Mar. 23	Constrn. 2¼ miles pavement; cost, $75,000	Matthew Brown, City Engr.
Ohio	North Lima	Mar. 23, 2 p.m.	Pavg. 2 miles of road	Bd. Trus.; Haseltine & Montgomery, Engrs. Youngstown.
Virginia	Lynchburg	Mar. 23	Constrn. 56,000 sq. yds. paving, 23,000 curb, 18,000 sq. yds. trench excavation	H. L. Shaner, City Engr.
Ohio	Canton	Mar. 25, 10 a.m.	Constrn. 1.48 miles road	County Comm.
Pennsylvania	Oil City	Mar. 25	Pavg. with vitrified brick or bituminous concrete 21,000 sq. yds, also 14,000 ft. curbing	R. MacKenzie, City Compt.
Ohio	Euclid	Mar. 25, noon	Improving Euclid road	F. H. Shoaff, Village Clk.
Ohio	Toledo	Mar. 25, 10 a.m.	Repairing stone road	C. S. Sanzenbacher, County Aud.
Wisconsin	Janesville	Mar. 26, 2 p.m.	Pavg. with brick 5,513 sq. yds.	J. C. Nichols, Chm. Comm.
Pennsylvania	Lisbon	Mar. 26	**Constrn. concrete culverts**	**County Comm.**
Alabama	Camden	Mar. 26	Constrn. 4 miles gravel road	Board County Comm.
Oklahoma	Muskogee	Mar. 26, 10 a.m.	Pavg. with bituminous concrete	Chas. Wheeler, City Clk.
Indiana	Jeffersonville	Mar. 27, 10 a.m.	Improving roads in cemetery	G. S. Bingham, A. Q. M.
Maryland	Baltimore	Mar. 27, 11 a.m.	Constrn. 110,000 yds. st. asph. or bit. concrete over cobble, 2,800 yds. brick, 1,500 sq. yds. wood, 900 yds. granite block, 7,800 yds. wood or granite	R. K. Compton, Chm. Pavg. Comm.
Alabama	Roanoke	Mar. 29	Constrn. road sand, clay or top soil	W. S. Keller, State Highway Engr.
Florida	Jacksonville	Mar. 29	Constrn. road	Board of County Commissioners.
Ohio	Cincinnati	Mar. 29, noon	Improving road	Board of County Commissioners.
Ohio	Ottawa	Mar. 29, noon	Constrn. stone roads	I. E. Roese, County Aud.
Ohio	Galion	Mar. 30, noon	Pavg. portions of 2 streets	E. C. Yochem, Clk. Dir. Pub. Serv.
Indiana	Mt. Vernon	Apr. 1	Constrn. 2 blocks paving	J. L. Schultheis, City Clk.
Ohio	Alliance	Apr. 1 (about)	Constrn. brick pavement and grading	I. F. Hogan, Clk. Dir. Pub. Serv.
Indiana	South Bend	Apr. 1, 11 a.m.	Constrn. macadamized road, 3 miles	Clarence Sedgewick, County Aud.
California	Vallejo	Apr. 1	Constrn. 6,000 sq. ft. concrete and asph.; cost, $150,000	A. P. Noyes, City Engr.
Louisiana	Shreveport	April 1	Furn. 60,000 tons hard rock or gravel	I. T. Bullen, Parish Engineer.
Indiana	South Bend	Apr. 1	Impg. Edwardsburg road	R. E. Keller, County Surveyor.
Ohio	Oberlin	Apr. 1	**Constrn. 6,000 yds. brick pavement; cost, $12,000**	H. T. Marsh, City Clk.
Ohio	Sandusky	Apr. 1	Constrn. 6½ miles roadway	Cedar Point Resort Co.
Alabama	Bethany	Apr. 1 (about)	Constrn. pavement; cost, $25,000	F. T. McCay, City Recorder.
Alabama	Montgomery	Apr. 1 (about)	Constrn. 4½ miles gravel road	County Commissioner.
Virginia	Portsmouth	Apr. 2, noon	Pavg. with granite (blocks furnished)	E. D. Hawks, Chm. St. Comm.
Indiana	Union	Apr. 2, 10 a.m.	Improving road	B. B. Engle, County Aud.
West Virginia	Huntington	Apr. 3, noon	Constrn. 4 miles or road, brick, stone or macadam	F. F. McCullough, Clk.
New Jersey	Long Branch	Apr. 3	Constrn. section of Ocean Highway; cost, $20,000	Freeholders.
West Virginia	Bluefield	Apr. 5	Constrn. 38,000 yds. bituminous macadam	Board of Affairs.
West Virginia	Pearl Harbor	Apr. 6, 11 a.m.	**Constrn. 22,575 sq. yds. oil macadam**	Commandant Naval Sta., Wash'gton.
Hawaii	Talladega	Apr. 8	Constrn. 4½ miles gravel road	W. S. Keller, State Highway Engr.
Minnesota	Winona	Apr. 9	Constrn. 21 miles macadam road	Jos. Winczewski, County Aud.
Florida	Lakeland	Apr. 15	Laying pavement	Board of Bond and Trustees.
Ohio	Akron	Apr. 25 (about)	Constrn. brick road	G. L. Farnsworth, City Engr.
Illinois	Ottawa	Apr. 30	**Pavg. with brick on concrete; cost, $300,000**	I. C. Moore, County Aud.
Illinois	Rochelle	Apr. 30 (about)	Pavg. with brick on concrete base; cost, $85,000	W. B. M. Henry, Mayor; Aetna Eng. Bureau, Chicago.
			SEWERAGE	
Minnesota	Willmar	Mar. 18	Constrn. 46,000 ft. sewers and disposal plant	Hans Gunderson, City Clk.
Nebraska	Auburn	Mar. 18, 6 p.m.	Constrn. 3 sewers	W. H. Bousfield, Clk.
Iowa	Ottumwa	Mar. 18, 8 p.m.	Constrn. main sewers	W. W. Cummings, Chm. Comm.
Wisconsin	Colfax	Mar. 19, 4 p.m.	Constrn. 1,400 ft. clay pipe sewer	H. B. Anderson, Clk.
Ohio	Akron	Mar. 19, noon	Constrn. main trunk sewer	R. M. Pillmore, Dir. Pub. Serv.
Ohio	Cleveland	Mar. 19, noon	Constrn. a number of sewers	W. J. Springborn, Dir. Pub. Serv.
Texas	Beaumont	Mar. 19, 10 a.m.	Constrn. 1,600 ft. concrete or brick sewer, 1,800 ft. 27-in., 1,125 ft. 18-in., 400 ft. 15-in., 1,700 ft. 12-in. vit pipe sewers and appurtenances	J. G. Sutton, City Sec'y.
Indiana	Muncie	Mar. 19	Constrn. sewer	City Clerk.
Tennessee	Jellico	Mar. 19	Constrn. 4.8 miles 8 to 12-in. pipe sewers and accessories	A. B. Mahan, Sec'y Sew'ge Comm.; W. J. Kirkpatrick, Jackson, Miss.

BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
New Jersey...	Beverly.....	Mar. 20, 9 p.m.....	Constrn. 7 miles 8 to 15-in. clay pipe sewers & disposal wks..	Thos. Lea, Chm. Comm.
Illinois.....	Chicago.....	Mar. 20, noon.....	Furn. sewer pipe and specials.....	J. F. Neil, Sec'y South Pk. Comm.
New York....	Brooklyn.....	Mar. 20, 11 a.m....	Constrn. sewers in a number of streets.....	A. E. Steers, Boro. Pres.
New Jersey...	Newark.....	Mar. 21, 3.30 p.m...	Constrn. sewers in several streets.....	M. H. Sherrerd, Ch. Engr.
Michigan.....	Saginaw.....	Mar. 22, 7.30 p.m...	Furn. sewer pipe, castings and drain tile.....	W. F. Jahnke, Clk. Bd. Pub. Wks.
Pennsylvania.	Norristown.....	Mar. 22.....	Furn. plans for sewerage disposal plant.....	S. C. Corson, Boro. Engr.
Minnesota....	Albert Lea.....	Mar. 22, 5 p.m.....	Constrn. 1,490 ft. 10-in., 6,800 ft. 8-in. sewer.....	Wm. Barneck, Engr.
New York....	Hobart.....	Mar. 25.....	Constrn. sewers and disposal plant.....	W. J. H. Robinson, Village Clk.
Kansas.....	Mulvane.....	Mar. 25.....	Constrn. sewer system.....	R. P. Seyfer, City Clk.
South Dakota..	Sioux Falls.....	Mar. 26, 11 a.m....	Constrn. west side sewer.....	City Commissioners.
New York....	St. George, S. I...	Mar. 26, noon.....	Constrn. outfall sewer.....	Boro. Pres.
Idaho.....	Pocatello.....	Mar. 28, 7 p.m.....	Constrn. 4,000 ft. 10-in., 20,000 ft. 8-in., 1,000 ft. 6-in. and appurtenances, 5 contracts.....	J. P. Congdon, City Engr.
Canada.....	Saskatoon, Sask..	Mar. 29, noon.....	Laying 13 miles sewer and water mains.....	G. T. Clark, City Engr.
Hawaii.....	**Pearl Harbor**....	**Mar. 30, 11 a.m....**	**Constrn. sewer system Pearl Harbor**.....	**Navy Dept., Washington, D. C.**
Texas.....	**Clarksville**.....	**April 1 (about)**.....	**Constrn. 8 miles sewers, cost $25,000**.....	**J. R. Webb, City Clerk.**
West Virginia.	Huntington.....	Apr. 1.....	Constrn. sewers.....	B. Maupin, City Engr.
Florida.....	Lakeland.....	Apr. 15.....	Constrn. sewers.....	Board of Bond and Trustees.
Louisiana.....	New Orleans....	Apr. 25, noon.....	Constrn. concrete line and covered sewer, 7,310 lin. ft. terra cotta pipe line, 26 to 6-in. diameter.....	F. S. Shields, Scy. Sew. & Water Bd.
California.....	Covina.....	May 1.....	Constrn. sewer system; cost, $45,000.....	Town Clerk and F. G. Dessery, Eng., Los Angeles, Cal.
Illinois.....	Altamont.....	May 1.....	Constrn. sewer system.....	City Council.
California.....	Venice.....	May 1.....	Constrn. sewers; cost, $15,000.....	G. F. Lewin, City Engr.
			WATER SUPPLY	
Canada.....	Windsor, Ont....	Mar. 18, noon.....	Furn. pump'g eng., 5,000,000 imperial gal. capacity.....	W. A. Hanrahan, Sec'y Water Com.
Canada.....	Moose Jaw, Sask.	Mar. 18.....	Constrn. reserv. centrif. pumps, elec. equip., steel pipes, etc..	E. B. Bonnell, City Clk.; W. J. Francis & Co., Engrs., Montreal, Can.
Missouri.....	Cape Girardeau..	Mar. 18, 5 p.m.....	Constrn. water works.....	G. E. Chappell, City Clk.
New York.....	Yonkers.....	Mar. 18, 3.30 p.m...	Furn. special castings and Venturi meter tubes on or before Apr. 15, 1912.....	Jas. V. Mahony, Scy. Bd. Con. Sup.
Indiana.....	Newcastle.....	Mar. 18, 7.30 p.m..	Constrn. 10,000 ft. 8-in., 10-in. and 12-in. c. i. water mains and accessories.....	Geo. M. Barnhard, Mayor.
Ohio.....	Cleveland.....	Mar. 19, noon.....	Furn. pig lead.....	W. J. Springborn, Dir. Pub. Serv.
Ontario.....	Windsor.....	Mar. 19.....	Installg. pumping engine.....	T. W. Brooke, Chm. Water Comm.
Tennessee....	Jellico.....	Mar. 19.....	Furn. two 750,000-gal. pumps, boilers, heater, etc.....	W. G. Kirkpatrick, Engr., Jackson, Mich.
Pennsylvania..	Reading.....	Mar. 19.....	Furn. 195 tons c. i. pipe, specials, valves, water meters, etc..	E. L. Neubling, Supt.
Maryland.....	Baltimore.....	Mar. 20, 11 a.m....	Furn. gate and check valve for pumping station.....	Board of Awards.
Iowa.....	Perry.....	Mar. 20.....	Constrn. 9,300 ft. 4-in. water mains.....	Perry Town Lot & Impvt. Co.
Illinois.....	Chicago.....	Mar. 20, noon.....	Furn. granite drinking fountains.....	J. F. Neil, Sec'y South Pk. Comm.
Nebraska.....	Ainsworth.....	Mar. 20.....	Extendg. water works system; cost, $21,000.....	City Clerk; Bruce & Standevin, Omaha, Neb.
Illinois.....	Chicago.....	Mar. 20, noon.....	Furn c. i. water pipe and specials.....	J. F. Neil, Sec'y So. Park Comm.
Wyoming.....	Sheridan.....	Mar. 25, 10 a.m....	Constrn. 7,450 ft. 4-in. c. i. pipe.....	J. J. Withrow, City Clk.
Ohio.....	Euclid.....	Mar. 25, noon.....	Constrn. water main.....	F. H. Shoaff, Clk.; Pearse Eng'g Co.
New York....	New York.....	Mar. 26, 11 a.m....	Furn. & delivering bronze ladders, steel gradings, w. i. pipe rails and steel plates for Ashokan reservoir.....	Board of Water Supply.
New York....	Peekskill.....	Mar. 28, 3 p.m.....	Constrn. reservoir at Wicopee.....	Water Board.
Canada.....	Saskatoon, Sask.	Mar. 29, noon.....	Constrn. water mains, etc.....	City Comm.
Wisconsin....	Watertown.....	Apr. 1.....	Constrn. well and installing pump.....	W. T. Vose, Sec'y Water Comm.
Ohio.....	Cambridge.....	Apr. 1.....	Repairing 2 pumping engines.....	J. M. Logan, Dir. Pub. Serv.
Canada.....	Winnipeg, Man...	Apr. 1.....	Installg. 2 deep well motor-driven turb. pumps, 1,000,000 gal. capacity.....	M. Peterson, Sec'y Bd. Control.
Pennsylvania..	Pittsburg.....	Apr. 1 (about).....	Constrn. reservoir & gate house; cost, $1,000,000.....	Director Public Works.
Dist. Columbia.	Washington.....	Apr. 3, noon.....	Bldg. dam and remodeling Georgetown reservoir.....	W. C. Langfett, Lieut. Col. Engrs.
Illinois.....	Fairbury.....	Apr. 17.....	Constrn. steel water tank.....	T. D. Karnes, City Clk.
Illinois.....	Altamont.....	May 1.....	Constrn. water works and furn. hydrants, valves, c. i. pipe, pumps, tower and tank.....	City Council.
			LIGHTING AND POWER	
Missouri.....	Cape Girardeau..	Mar. 18, 5 p.m.....	Furn. plans and specifications for lighting plant.....	C. E. Chappell, City Clk.
Canada.....	Calgary, Alta...	Mar. 20.....	Furn. 2,500-kw. turbo-generator, 1,000-kw. motor gen'tor, etc.	J. M. Miller, City Clk.
South Carolina	Charleston.....	Mar. 20, noon.....	Lighting streets for 1, 2 or 4 years.....	P'on Simons, City Elec.
Canada.....	Saskatoon, Sask..	Mar. 22.....	Furn. 2,000 kw. steam turbines and other equipment.....	Jas. Clinkskill, City Comm.
Canada.....	**Winnipeg, Man...**	**Mar. 25**.....	**Furn. cables for fire and electric system**.....	**M. Peterson, Sec'y Bd. of Control.**
New York....	Yonkers.....	Mar. 25, 3 p.m.....	Furn. 10,000,000 gal. pumping engine.....	J. V. Mahony, Sec'y Bd. Contract.
Tennessee....	Memphis.....	Mar. 26, noon.....	Furn. turbines, pumping sets, boilers and electric light plant.	Miss. Riv. Comm., U. S. Engr. Office.
Canada.....	Moose Jaw, Sask.	Mar. 30, 10 a.m....	Furn. 1,500 kw. turbo gen. & 500 kw. direct-connected gen.....	A. W. Maybery, Chm. City Comm.
Canada.....	Edmonton, Alta..	Mar. 31.....	Improving lighting plant; cost, $200,000.....	J. C. Huffman, Supt. of Plant.
Ohio.....	Navarre.....	Apr. 1.....	Furn. elec. driven triplex pump, 250 gal. per min., tank, 5 miles 4 to 10-in. c. i. pipe, hydrant, etc.....	H. W. Foster, Mayor; L. E. Chapin, Consult. Engr., Pittsburgh.
Georgia.....	Atlanta.....	Apr. 3.....	Furn. elec. st. lighting serv. for city; 1,600 luminous arc lights, 80 c.p. series tungsten 1,000; 400 (White Way) posts, 400 c.p.....	J. E. McClellan, Chm. Elec. Light Service Comm.
Illinois.....	Alton.....	Apr. 6.....	Lighting streets with 260 arcs.....	B. R. Kennedy, City Clk.
			FIRE EQUIPMENT	
Massachusetts.	Boston.....	Mar. 14.....	Constrn. fire boat station.....	C. H. Cole, Fire Comm.
New York.....	New York.....	Mar. 18, 10.30 a.m..	Furn. two 5-ton gasoline motor trucks.....	Jos. Johnson, Fire Comm.
New Jersey...	Long Branch....	Mar. 18, 7.30 p.m...	Furn. 500 ft. 2½-in. hose, 50 firemen's coats, 50 pairs rubber boots, also fire alarm equipment.....	B. B. Newcomb, City Clk.
Ohio.....	Cleveland.....	Mar. 18, noon.....	Furn. 26,836 ft. underground lead cables.....	C. W. Stage, Dir. Pub. Safety.
Massachusetts.	Revere.....	Mar. 19.....	Constrn. fire station.....	City Clerk.
Minnesota....	Eveleth.....	Mar 19.....	Installg. storage battery system.....	D. P. McIntyre, City Clk.
New York....	Port Chester....	Mar. 20 (about)....	Alterg. fire house; cost, $4,000.....	T. J. Connolly, Clk.
New Jersey...	Atlantic City....	Mar. 20, noon.....	Erecting fire house.....	W. S. Cuthbert, Chm. Fire Com.
Canada.....	Niagara Falls....	Apr. 1.....	Furn hook and ladder truck.....	W. J. Seymour, City Clk.
			BRIDGES	
Canada.....	Columbus, Ont...	Mar. 18, noon.....	Constrn. 12 reinforced concrete bridges.....	H. Gifford, Reeve; Bowman & Connor, Engrs., Toronto, Can.
Kansas.....	Wichita.....	Mar. 18.....	Constrn. 8 culverts and 5 bridges.....	County Commissioners.
Minnesota....	Waseca.....	Mar. 18, 2 p.m.....	Repairing bridges.....	County Board.
Illinois.....	Virginia.....	Mar. 19, 1 p.m.....	Constrn. reinforced concrete bridge.....	L. O. Skiles, County Clk.
Illinois.....	Waukegan.....	Mar. 20.....	Constrn. conc. highway bridge, 490 ft. long; cost, $74,000...	J. J. Dietmeyer, Comm. Pub. Wks.
New Jersey...	Paterson.....	Mar. 20.....	Constrn. steel and concrete bridges over raceway.....	Board of Freeholders.
Minnesota....	Luverne.....	Mar. 20, 2 p.m.....	Constrn. culverts and bridges.....	County Comm.
N. Hampshire..	Berlin.....	Mar. 21, 8 p.m.....	Erectg. superstructure of two 116-ft. bridges.....	L. J. Wertheim, City Engr.
Kansas.....	Topeka.....	Mar. 22.....	Constrn. concrete steel bridge.....	F. B. Simms, Chm.
Nebraska.....	Grand Island....	Mar. 26, 2 p.m.....	Repairing bridges.....	G. E. Neumann, Clk. Supervs.
Florida.....	**Jacksonville**....	**Mar. 29**.....	**Constrn. 1 concrete and 2 wooden bridges**.....	**C. W. Ellis, Chm. County Comm.**
Ohio.....	Steubensville....	Mar. 26.....	Constrn. concrete bridge; cost, $1,000.....	E. C. Ginger, County Surv.
California.....	Pasadena.....	Mar. 26.....	Constrn. concrete bridge, 1,460 ft. long.....	Herman Dyer, City Clk.; Waddell & Harrington, Kansas City, Mo.
Indiana.....	**Bluffton**.....	**Apr. 1 (about)**.....	**Constrn. 8 concrete bridges and box culvert**.....	**L. A. Williamson, County Aud.**
South Dakota.	Yankton.....	Apr. 1, 7.30 p.m....	Constrn. reinforced concrete bridge.....	J. W. Summers, City Aud.
Indiana.....	Kokomo.....	Apr. 2, 10 a.m.....	Constrn. reinforced concrete bridge.....	A. B. Easterling, County Aud.
South Dakota.	De Smet.....	Apr. 2, 1 p.m.....	Constrn. bridges and culverts.....	W. M. Look, County Aud.

BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
South Dakota.	Howard.....	Apr. 3, 2 p.m.....	Constrn bridges during year.....	H. L. Arnold, County Aud.
South Dakota.	Mitchell.....	Apr. 8, 2 p.m.....	Constrn bridges during year.....	R. A. Zangle, County Aud.
Minnesota....	**Winona.....**	**Apr. 9.....**	**Constrn. 80-ft. steel truss bridge.....**	**County Auditor.**
Illinois.....	Maywood.....	Apr. 15 (about)....	Constrn. concrete bridge; cost, $35,000.....	Westcott & Ronneberg, Engs., Chicago.
			MISCELLANEOUS	
Texas.....	San Antonio....	Mar. 16, 11 a.m....	Furn. three 400-gal. oil wagons, distributor and gasoline pump, mounted on wheels.....	J. V. Huntress, County Aud.
Connecticut...	Hartford.....	Mar. 18, 11 a.m....	Furn. 50,000 bricks for catch basins, sewers, etc.....	Board Con. and Supply.
New Jersey...	Paterson.....	Mar. 13, 2 p.m....	Furn. automobile for road dept.....	W. H. Mason, Chm. Freeholders.
New York....	Long Island City.	Mar. 18, 11 a.m....	Furn. five 10-ton steam road rollers.....	M. E. Connolly, Boro. Pres.
Massachusetts.	Boston.....	Mar. 19, noon.....	Furn. 250-ton round and 20-ton square twisted bars.....	B. L. Beal, Sec'y Transit Comm.
Missouri.....	St. Louis.....	Mar. 19.....	Constrn. comfort station.....	Maxime Reber, Pres. Bd. Local Imp.
Maryland.....	Baltimore.....	Mar. 20.....	Constrn. 100 cu. yds. concrete retaining wall, etc.....	Board of Awards.
New Jersey...	Camden.....	Mar. 21, 3 p.m....	Constrn. immigrant pier.....	Supervising Architect.
New York....	Little Falls.....	Mar. 21.....	Sprinkling streets.....	Board of Public Works.
New York....	New York.....	Mar. 21.....	Constrn. bulkhead along speedway; cost, $100,000.....	C. B. Stover, Park Comm.
Ohio.....	Lexington.....	Mar. 23.....	Bldg. town hall.....	Jacob Hellinger, City Clk.
Canada.....	Herid, Sask.....	Mar. 24.....	Furn. road grader, 6 wheel scrapers, 12 slush scrapers.....	L. W. Atkinson.
Canada.....	Halifax, N. S....	Mar. 27.....	Constrn. garbage incinerator.....	J. J. Hopewell, Clk. Cy. Wks. Office.
Kentucky. ...	Manchester.....	Apr. 1.....	Constrn. jail.....	T. J. Rawlings, Chrmn.
Cuba.....	Santiago.....	May 6.....	Constrn. 6,400 meters of tramway.....	La Jefatura del Distrito de Oriente.

STREET IMPROVEMENTS

Montgomery, Ala. — Intersections of streets in business section of Montgomery will be repaired at once. Several improvements will be made at intersection of Perry and Dexter aves. Work will be under supervision of City Engineer, A. R. Gilchrist.

Tuscaloosa, Ala.—Resolution has been passed endorsing paving of business section of city.

Uniontown, Ala.—Town solicits bids on laying of concrete walks and curbing with gutters. Amount of work approximately $10,000. Instruction to bidders, contract and specifications mailed on application. Dud P. Coleman, Mayor.

Phoenix, Ariz.—Plans for paving South Central and First aves. have been approved by Council.

Hollister, Cal.—State Highway Commission has decided upon San Juan Hill route for State highway.

Los Angeles, Cal.—Ordinances have been passed for improvement of various streets.

Los Angeles, Cal.—Plan of City Engineer to open San Pedro st., from Vernon to Main, has been approved by City Council, and engineer instructed to take necessary steps to open the street.

Marysville, Cal.—Fifth st. will probably be bituminized from D to Western Pacific passenger depot at K st.

Marysville, Cal. — Seven blocks of streets are to be paved this spring, and it is expected that number of other streets will be paved before next fall.

Pasadena, Cal.—On recommendation of Street Commision City Council has declared its intention of improving during season of 1913 all streets in territory north of Colorado st., west of Fair Oaks ave. and south of North Orange Grove ave.

Pasadena, Cal.—Andrew Holloway, of Pasadena, was only bidder for contract of paving Mission st. and Pasadena ave. in South Pasadena. His figures, approximately $65,000 for entire job, were below engineer's estimate. He agrees to lay pavement at cost of 14.8 cents a sq. ft., and his bid for storm drain approximates $4,000.

San Jose, Cal.—Chamber of Commerce recommends paving of various city streets.

Washington, D. C.—Anacostia Citizens' Association is urging movement to secure appropriation of $5,000 for grading and improving of Minnesota ave., from Good Hope rd. to 18th st.

Clearwater, Fla.—Pinellas County is contemplating issuance of $450,000 bonds for road construction.

Eau Gallie, Fla.—Committee has been appointed to consider construction of 30 miles hard surface road in Brevard County. G. F. Paddison, Chairman.

Lakeland, Fla.—City has engaged Jas. Nisbet Hazlehurst, Atlanta, Ga., to prepare plans and specifications for street paving, for which $60,000 has been appropriated.

Lakeland, Fla.—J. N. Hazelhurst, Consulting Engineer, will shortly make surveys for street paving and sewerage.

Cedartown, Ga.—City Council of Cedartown has ordered election of bonds for $20,000 to be held April 8. This is for purpose of paving Main st. of this city from city hall to Right House.

Macon, Ga.—Petitions have been received asking for various street repairs.

Macon, Ga.—Petition will be sent to City Council by residents of Montpelier ave. from Seymour st. to Pio Nono ave., asking that curbing be placed along this thoroughfare.

Kendrick, Idaho—Kendrick Commercial Club has inaugurated plan for good roads construction and has already taken up matter of improvement of Bear Creek rd. and highway serving the Cedar Creek district.

La Salle, Ill.—Keys & McNamara were lowest bidders for paving job at Morris. Two streets, Benton and Washington, are to be paved. For Benton st. job engineer's estimate was $24,496.90. The La Salle firm bid $24,399.60. In Washington st. job engineer's estimate was $21,143.24. Keys & McNamara offered to do work for $19,875.55.

Springfield, Ill.—Board of Local Improvements has decided to pave Reynolds st. with brick, with asphalt binder.

Newcastle, Ind.—Big program for permanent improvement of Newcastle's thoroughfares was started by City Council when it passed resolution providing for pavement of Plum st., Walnut st., Church st., Central ave., Livery st. and Vine st.

Vincennes, Ind.—Petition has been received asking for improvement of Emison ave. by grading and graveling road bed and building of concrete sidewalks.

Providence, Ky.—City is contemplating $50,000 bond issue for construction of streets.

New Orleans, La.—Opening of Poland ave., from Florida Walk to Gentilly ave. to connect with Dowman ave., is petitioned for.

Shreveport, La.—Sum of $500,000 will be expended in Caddo parish for road improvements.

Acushnet, Mass.—Appropriation of $5,000 has been authorized for improvement of highways and roads.

Boston, Mass.—Taxpayers have voted in favor of bonding village of Larchmont for sum of $50,000 for permanent improvements to Old Boston Post rd.

Dartmouth, Mass. — Appropriation of $20,000 has been authorized for improvement of highways.

Dracut, Mass.—Appropriation of $1,000 has been made for macadamizing of Pleasant st., and $10,000 for making repairs on Mammoth rd.

Lynn, Mass. — County Commissioners have decided to issue decree authorizing city to lay out portion of Bennett st. which passes under Sangus branch tracks of Boston & Maine Railroad.

Marion, Mass.—Appropriation of $2,500 has been made for construction of continuation of Point rd.

Rochester, Mass.—Appropriation of $1,000 has been voted for macadamizing road leading to Mattapoisett.

Portland, Me.—Extensive street improvements are being planned.

Petoskey, Mich.—City is planning paving of 10 or 12 blocks, and also curbing and guttering of same.

Duluth, Minn.—St. Louis County will spend in neighborhood of $270,000 this year for roads and bridges.

Guntown, Miss.—First District of Lee County has voted on issuance of bonds for building good roads. Proposition carried by safe majority.

Meridian, Miss.—Election will probably be considered for voting on bond issue of $100,000 for additional street paving in residence districts.

Belleville, Mo.—Belleville Board of Public Improvements has recommended to City Council passage of ordinances providing for paving with brick of Fourth, Fifth, Sixth and Seventh sts. and Glenn and Park aves. Estimated cost of improvements is more than $100,000.

Atlantic City, N. J.—Bitulithic pavement has been ordered by Council for Baltic ave. and for portions of six cross-town aves., latter including Vermont, New Hampshire, Rhode Island, Maryland and Pennsylvania. latter street to be improved above Baltic and also from beach half way up to Atlantic ave.; estimated cost, $100,000.

Bayonne, N. J.—New petition for paving of Avenue E, from Broadway and Eighth st., Bayonne, to 52d st., has been presented to City Council by Avenue E Property Owners' Association.

Haddonfield, N. J.—Petition is being circulated for decreasing width of streets.

Hoboken, N. J.—Bill to allow bond issue for repaving of streets has passed second reading.

Long Branch, N. J.—Purchase of steam roller is being considered.

Perth Amboy, N. J.—Plans are being considered for construction of boulevard along High st., from City Hall Park to Lewis st.

Long Branch, N. J.—Board of Chosen Freeholders has approved building of another link in ocean boulevard, from Sea Bright to Highlands rd., distance of 7,768 ft. Proposed road will be built of gravel and will be 30 ft. wide.

Merchantville, N. J.—Ordinance has been passed ordering lay of cement sidewalks along Volan st., between Victoria and Morris sts. These walks are to be completed in 90 days. Ordinance was also passed ordering curbs laid on all streets of borough.

Albany, N. Y.—At meeting of Highway Commission Superintendent C. Gordon Reel has had amended allotment of new roads for Onondaga County so as to include six miles additional construction. Road starts at improved county highway near South Bay and continues southeast along shore of Oneida Lake to Bridgeport.

Bath, N. Y.—Appropriation of $3,500 will be voted for paving Buell st.

Cohoes, N. Y.—Plans for construction of more than 250 miles of county highways have been approved by State Highway Commission. C. Gordon Reel, Superintendent of Highways, has ordered plans sent to Boards of Supervisors of various counties for their approval. Among those in Albany and Rensselaer County are: Albany-Watervliet, 2.42 miles; Fuera Bush-Indian Fields, 8.27 miles; East Berne-Glyckman's Church, 4.35 miles; Spiegelton-Melrose, 2.55 miles; DeFreestville-Couse, 3.14 miles; Wyantskill-DeFreestville, Winter st., 4.10 miles.

Dunkirk, N. Y.—It has been decided to pave Courtney st.

Goshen, N. Y.—Board of Supervisors has decided to expend $3,000 for improvement of highway running from Warwick to Greenwood Lake.

Johnstown, N. Y.—Paving of North Perry st. and West Madison st. is being discussed.

Kingston, N. Y.—Contract for construction of several roads in Ulster County will shortly be awarded.

Lockport, N. Y.—Board of Supervisors will consider suggested change in route of $1,000,000 highway through Niagara County from that along Ridge rd., as recently made by State Highway Commission.

Niagara Falls, N. Y.—Resurfacing of Falls st., from Erie ave. to Riverway, has

been referred to City Engineer for estimate.

Niagara Falls, N. Y.—Purchase of two street sweepers has been authorized.

Niagara Falls, N. Y.—Resolution has been adopted by Common Council for paving and macadamizing of Portage rd., from Buffalo ave. to Pine ave., from Pine ave. to Cedar ave., from Cedar ave. to Pierce ave., 35.84 ft. in width including curbs, at estimated maximum cost of $105,350 if granite or wood block is used, of which amount $11,700 is estimated cost for intersections; $94,800 if asphalt block is used, of which $10,525 is estimated cost for intersections; $87,300 if asphalt, brick or bitulithic is used, of which amount $9,700 is estimated cost for intersections; and $75,200 if hassam cement concrete is used, of which amount $8,350 is estimated cost for intersections, in accordance with plans prepared by City Engineer.

Niagara Falls, N. Y.—Board of Public Works recommends laying of pavement on 13th st., frm Lockport st. to Cleveland ave., from Cleveland ave. to Niagara ave., and from Niagara ave. to Ontario ave. Length, 605 ft., width, including curbs, 28.8 ft.; also pavement on Fairfield ave., from Ninth st. to 11th st. Length, 1,028 ft.; width, including curbs, 30.8 ft.

Poughkeepsie, N. Y.—Board of Public Works will improve Grand ave. with combined concrete curb and gutter. R. J. Shields, Clerk.

Rochester, N. Y.—Ordinance is being favorably discussed for paving of Favor st.

Syracuse, N. Y.—Board of Supervisors passed resolution providing for construction of six miles of county road between village of Onondaga Hill and town of Lafayette. New highway will begin at terminus of what is called "Cemetery rd.," and will continue across Onondaga Hill to Lafayette. It will cost between $5,000 and $6,000 a mile.

Utica, N. Y.—Ordinances have been passed for following street improvements: To resurface Blandina st.; to pave Sunset pl., Roberts st., Lexington st., Lexington pl., Jay st., High st., Reagen pl., Howard ave.; to resurface Conklin ave.; resurfacing Seymour ave. In each case plans were ordered and Board of Contract was authorized to do the work.

Utica, N. Y.—Ordinances have been passed for paving of 12 streets, and bids will shortly be advertised.

Yonkers, N. Y.—Ordinance has been passed for opening and extending St. James Terrace. J. F. O'Brien, City Clerk.

Wahpeton, N. Dak.—Street paving is being discussed.

Asheville, N. C.—Bids will shortly be asked for construction of 10,000 to 20,000 yds. of concrete sidewalks and 5,000 yds. of excavation.

Chapel Hill, N. C.—Issuance of $250,000 road building bonds will be voted on March 19 by Orange County.

Raleigh, N. C.—Board of Aldermen has voted to borrow $10,000 to use as fund for laying sidewalks.

Barberton, O.—Council is considering question of paving Third st., 40 ft. or 36 ft.

Cleveland, O.—Ordinances have been passed for improvement of various streets.

Dayton, O.—Resolution has been introduced for extension of Illinois ave.

Dayton, O.—Councilman Happel will introduce resolutions in City Council ask for grading and graveling of Dickmore st., from Halley to Brant st., and for grading and graveling of Bellefontaine ave., from Valley to Brant st.

Dayton, O.—Bonds amounting to $101,900 have been sold for street repairs, street paving, new bridge for Stewart st. canal and for sanitary sewers.

Toledo, O.—Providence Savings Bank & Trust Co., of Cincinnati, has been awarded issue of $170,000 street improvement bonds and $135,000 bridge bonds by Finance Committee.

Youngstown, O.—Three main thoroughfares out of city, known as Boardman, Cornersburg and Austintown rds., will be paved with brick for varying distances during coming summer. Boardman rd. will be paved from Kyles Corners to Boardman Center, approximately three and one-half miles. Cornersburg rd. will be paved from Kyles Corners to Riblets Corners, two miles. The Austintown rd. will be bricked from present city limits in Mahoning ave. to Perkins Corners, one and one-half miles, and possibly further. Besides these roads, plans for summer include macadamizing of roads in Jackson Township, from Milton Township line east through Rosemont to Kirk P. O., three miles long; roads in Austintown Township, from Smiths Corners east to Raccoon rd. and Raccoon rd. north to Youngstown-Austintown rd. Town line road, between Youngstown and Boardman Townships, from Market st. west to Glenwood ave., about one mile, and town line road along entire west line of Youngstown Township, five miles, will also be macadamized.

Altoona, Pa.—Question of increasing bonded indebtedness of city to amount of $150,000 is being considered, for street paving and sewer construction.

Chester, Pa.—Bids will be advertised for paving of various city streets.

Pittsburgh, Pa.—Public Works Department will repair, resurface and repave various streets. Director Armstrong has asked for appropriation of $420,000.

York, Pa.—Bills have been passed first reading for grading and repairing of Rouse ave., from Edgar st. to Albemarle st., and Jefferson ave., from west side of Beaver to George st.

Providence, R. I.—Widening of Constitution Hill, or that part of North Main st. running from Mill st. to Benefit st., is under consideration.

Nashville, Tenn.—Overton County has, by majority of about 400, voted to issue $150,000 in bonds for free turnpikes.

Nashville, Tenn.—Construction of highway from Nashville to Chattanooga is being considered. Proposed route is as follows: From Nashville to McMinnville to Memphis-to-Bristol highway, by way of Woodbury and Murfreesboro; from McMinnville through Sequatchie County by way of Dunlap, to Hamilton County line, and over Hamilton County turnpike to Chattanooga. Practically only road to be built will be in Sequatchie County, where road will cross Cumberland Mountains.

Colorado, Tex.—Bonds amounting to $30,000 have been sold by Mitchell County for road construction.

Corpus Christi, Tex.—City Council has passed by unanimous vote, resolution calling for special election to be held on March 25, for purpose of property owners accepting or rejecting proposition for issuance of $150,000 bonds for street paving purposes.

Dallas, Tex.—Orders have been passed by County Commissioners authorizing County Auditor to advertise for bids on work on Garland-Housley and Mesquite-Wilmer rds.

Dallas, Tex.—Only six bids were received by County Commissioners for work on four cardinal and intermediate roads on which $500,000 bond money is to be expended. These bids were for only seven of 12 roads, no bids being received for five. County has sum of $400,000 to expend in building 12 roads on which bids were asked. One hundred thousand dollars of $500,000 will be spent in building connecting roads with four cardinal and eight intermediate roads on which $400,000 is to be spent.

Denton, Tex.—Plans are being arranged for building of about 25 miles of piked roads with $75,000 bond issue. Engineer is now making preliminary surveys, estimates, etc.

Mineral Wells, Tex.—Commissioners' Court has ordered good roads bond issue election for Precinct No. 1, to be held Saturday, April 6. The proposed issue is for $100,000.

Quanah, Tex.—Proposition is being considered for paving of seven blocks.

San Antonio, Tex.—Proposals for opening of Starr st. through to connection with East Houston st. and for widening of Soledad st., from Travis to Giraud sts., have been taken up for consideration at meeting of City Council Committee.

Terrell, Tex.—City Commission of Terrell has opened bids for construction of 4,127 lin. ft. of concrete sidewalk and 320 ft. of street crossings. Bids ranged from 12 cts. to 12½ cts. per ft. Contract was not awarded but will be in few days, Commission having 20 days in which to do so.

Terrell, Tex.—City Commission has given notice of bond election to be held in 30 days for voting on $25,000 street improvement bonds.

Eastville, Va.—Project of bonding county for $150,000 to make five roads is recommended.

Bristol, Va.—Extensive stone road construction is planned for this region. Counties in both East Tennessee and Southwest Virginia have provided for money by issuing bonds. Sullivan County, Tenn., will open bids for $100,000 issue on March 11. This will make a total of $400,000 for roads, and court has authorized issuance of still another $100,000. Wise County, Va., will spend $700,000, Tazewell County will spend about $400,000, and other counties will spend liberal amounts. Construction of Memphis-to-Bristol highway and Bristol-to-Washington highway will be started this spring.

Norfolk, Va.—Councilman Nicholas F. O'Dea introduced in Common Council resolution carrying appropriation of $90,000 for smooth paving in east side of Sixth Ward, and at his request it was referred to Finance and Public Improvement Committees. Streets named in Mr. O'Dea's resolution are 10th, 11th, 13th, 14th and 15th sts., Omohundro ave. and others in that section.

Rocky Mount, Va.—At meeting of Board of Supervisors of Franklin, it was decided to use $2,000 State aid fund for roads in macadamizing county roads running through Rocky Mount, town to supply other $2,000.

Spokane, Wash.—Jay P. Graves, former local railroad magnate and millionaire, was only bidder for $57,900 in special improvement bonds issued by city to pay for North Wall st. day labor paving job, and his bid was accepted.

Spokane, Wash.—About $100,000 worth of improvement work in various parts of city has been planned as follows: First Ward subtrunk sewer, District No. 8, estimated $13,818; First Ward subtrunk sewer, District No. 17, estimated $20,695; grading 13th ave., Latawah to Lamone, and Latawah, 29th to 30th, estimate $2,000; grading Hatch st., Hartson to Ninth ave., estimated $11,500; paving Seventh ave., Bernard to Howard st., estimate $18,300. Grading Post st., Central to Wellesley ave., estimate $16,400; grading 38th ave., Perry to Grand blvd., estimate $9,200.

Snohomish, Wash.—Snohomish Commercial Club, in accepting report of special committee to which was referred matter of building roads, endorsed issuance of $2,000,000 worth of 20-year 5 per cent. road bonds, to be expended pro rata throughout three road districts of county, and requested County Commissioners to order same to be voted upon at general election in November next.

Sumner, Wash.—Paving of business streets is being favorably discussed.

Tacoma, Wash.—Municipal Commission has voted to submit to voters at election April 16, proposed bond issue of $45,000 for paving roadway through sixth addition, from South 30th st. and Tacoma ave. to South Tacoma.

Racine, Wis.—City is considering doing its own street sprinkling, and may secure two large sprinkling tanks, to be propelled by motors.

Niagara Falls, Ont., Can.—Welland and Halidmand are latest counties to adopt scheme for building of good roads, and work in each of these counties will be commenced as soon as spring opens up. W. A. McLean is Highways Engineer. This county has passed by-law to raise $100,000 for this purpose, and to this Ontario Government will add $50,000 in accordance with custom.

CONTRACTS AWARDED

Selma, Ala.—By City, to Jamison & Hallowell, of Montgomery, Ala., and Atlanta, Ga., at $1.55 per sq. yd., for paving.

Phoenix, Ariz.—To Barber Asphalt Paving Co., to lay about 20 blocks of paving at following prices: 2-in. bitulithic with 5-in. concrete base, $2.15 per sq. yd.; curbs, 50 cents per lin. ft.; 18-in. gutters, 50 cents per lin. ft.; reinforced flumes, $2.25 per lin. ft. O. T. Gurney is City Engineer.

Long Beach, Cal.—By Board of Public Works, to build cement sidewalk and bulkhead extending along beach from Virginia Hotel westward to jetty, to Chas. Stansbury, of Los Angeles, for $73,000.

Oroville, Cal.—To A. A. Flagg, of Oroville, for laying 1½ miles of concrete sidewalks in Oroville, for $10,613.

Augusta, Ga.—By City, to A. A. Hett & Co., of Augusta, for 15,000 sq. ft. of cement paving on Barrett Plaza. Nisbet Wingfield is City Engineer.

Fitzgerald, Ga.—By City, to Birmingham Paving Brick Co., Birmingham, Ala., to pave four blocks, two on Pine and two on Grant st.; vitrified brick on four-in. concrete foundation.

Monmouth, Ill.—By Board of Local Improvements, to Burlington Construction Co., Burlington, Ia., for six blocks of paving. Geo. H. Burns is City Clerk.

Carmi, Ind.—For construction of stone road in Big Creek Township, White County, to J. W. Moneyham, Monon, at $8,938.

Elkhart, Ind.—To Northern Construction Co., to pave with Metropolitan block, cement fill, St. Joseph st., for $15,102, and Oakland ave. for $33,419. Andrew Asphalt Paving Co., of Hamilton, O., for

paving Beardsley ave. with asphalt for $5,467.

Marion, Ind.—By Board of Works, for improvement of 17th st., from Washington to Boots st., to Contractor William Yates.

Des Moines, Ia.—To Bryant Asphalt Paving Co., for paving with asphalt on E. 12th st., at $1.78 per sq. yd.

Ft. Madison, Ia.—To Stephen Schulte, of Chanute, Kan., for paving Fifth, Vine, Walnut and Sixth sts., at $48,488.

Manhattan, Kan.—For paving as follows: To Kaw Paving Co., for 18,500 sq. yds. of brick paving on 5-in. base, asphalt fill, for $40,352, including curb and gutter; to Ramsey Bros., for 19,005 sq. yds. Sarco asphalt on 5-in. concrete base, at $1.34 per sq. yd., total of $32,405, including curb and gutter; to Chapin & Co., for 3,067 sq. yds. of Dolarway concrete paving, at a total cost of $3,424, including curb and gutter.

Topeka, Kan.—By City, for about 63 blocks of brick paving, to Capitol City Vitrified Brick & Paving Co., at $142,-970.44. Other bids as follows: Ritchie Bros., Topeka, Kan., $146,209.51; McGuire & Stanton, Leavenworth, Kan., $148,736.80; Hoff & Williams, Muskogee, Okla., $148,812.26; Olson & Schmidt, St. Joseph, Mo., $148,960.01; Western Paving Co., Oklahoma City, Okla., $150,895.96; F. M. Spencer, Luttjohann & Folks, Topeka, Kan., $151,208.73; Cleveland Trinidad Co., Cleveland, O., $153,747.34; A. Jaicks, Chicago, Ill., $155,709.14; Roach-Manigan, Memphis, Tenn., $160,185.98; Kaw Paving Co., Topeka, Kan., $156,473.38; Thogmartin & Gardiner, Fort Scott, Kan., $162,283.13; W. W. Jones, Topeka, Kan., $168,870.76. Engineer's estimate, $156,-211.67.

Louisville, Ky.—By Board of Public Works, for constructing granitoid sidewalks, to G. W. Younger Co., H. H. Snyder Co., G. W. Gosnell Co., Edwin S. Larson and American Concrete Construction Co.

Baltimore, Md.—By City, for paving contracts Nos. 6, 7 and 8, respectively, to Elder Paving & Construction Co., P. Flanigan & Sons and Filbert Paving & Construction Co., of Baltimore. Contracts are for sheet asphalt paving, and aggregate $260,000.

Hannibal, Mo.—By City, for 100,000 sq. ft. sidewalk, to Ratcliffe Gibson Construction Co., of St. Joseph, Mo., at 11 cents per sq. yd. for walk; 40 cents per cu. yd. for grading, and $10 per cu. yd. for retaining wall. B. F. Smiley, City Engineer.

Long Island City, N. Y.—For paving in Borough of Queens, as follows: Cooper ave., Glendale, Uvalde Construction Co., 1 Broadway, New York City, $4,600; Woodhaven ave., North Woodhaven, Barber Asphalt Paving Co., 30 Church st., New York City, $6,216; Hempstead and Jamaica Turnpike, Jamaica, Barber Asphalt Paving Co., $9,851; Shell rd., Corona, Atkinson Construction Co., 300 Fifth ave., New York City, $30,728; Hempstead and Jamaica Turnpike, Jamaica, to Uvalde Construction Co., $43,087; Central ave., Rosedale, to Continental Public Works Co., $28,479; for grading, curbing, recurbing and repaving with granite blocks on a concrete foundation Metropolitan ave., Ridgewood, Chas. A. Meyers, 39 Worth st., New York City, $34,791; repaving with granite blocks Jackson ave., Corona, to Henry J. Mullen, 289 Fulton st., Jamaica, $31,473.

New York, N. Y.—For paving with asphalt concrete, Warrenite or Amiesite pavement on concrete foundation, in Queens Borough, as follows: Cooper ave., from Myrtle ave. to Montauk Division of the L. I. R. R., Uvalde Construction Co., at $4,600; Woodhaven ave., from Jamaica ave. to Forest Park Driveway, North Woodhaven, Barber Asphalt Co., $6,216; Hempstead and Jamaica Turnpike, from Grand st. to Harvard ave., Jamaica, Barber Asphalt Paving Co., $9,-851; Merrick rd., from Fulton st. to a point 1,500 ft. south of Central ave., Springfield, town of Jamaica; Shell rd., from Thompson ave. to Jackson ave., Corona, Atkinson Construction Co., $30,728; Uvalde Construction Co., Hempstead and Jamaica, to Nassau County lane, $43,087; Central ave., Rosedale, from Merrick rd. to city line, Continental Public Works Co., $28,479; Lawrence st., Flushing and College Point Causeway, from a point 500 ft. north of Broadway to 13th st., College Point, $11,932.

Syracuse, N. Y.—By City, for DeWitt-Cicero rd., to Joseph McCormick, at $37,-940.44; also for Salina-Clay rd., at $27,-234, and for Syracuse-Cedarvale rd., to R. Hopkins, at $28,487.

Yonkers, N. Y.—By Board of Contract & Supply, for regulating and grading 241st st., from McLean ave. to south line, to E. T. Eggleston, at $3,756. Other bils as follows: J. A. Cianfaglione, $3,900; F. E. Gross & Son, $3,924, and Joseph Cuozzo, $3,950.

Cincinnati, O.—For paving portion of Cornell ave., to Jas. L. Radabaugh, for $14,283.

Dayton, O.—By Board of Control, for paving of North Main st., to E. M. Gebhart, at $15,000.

Findlay, O.—By Board of Commissioners of Hancock County, for repairing four sections of county road, as follows: McComb, North River and Bridge rd., John Semler, $1,166.66, $612.50 and $706, respectively; Arlington rd., C. L. Biggs, $2,326.40.

Marion, O.—For street improvements as follows: Brick paving on Park blvd., Hofstetter & Dawson; asphalt macadam pavement on Monroe st., P. Drake & Sons; sandstone walks in Bryant ave., O. J. Noble.

Steubenville, O.—By Smithfield-Hopedale Free Turnpike Road Commissioners, for grading, sewering and macadamizing Smithfield and Hopedale rd., to S. T. Frazier, Bloomingdale, O., Sec. 1, 10,283 ft. long, $9,637; Sec. 2, 9,735 ft. long, $10,340; also to Wm. Heburn, Mt. Pleasant, O., Sec. 3, 9,984 ft. long, $9,856.

Tulsa, Okla.—By City, for fixing five blocks of E. Archer st., to Eureka Construction Co., of Tulsa, at $17,778.23.

Philadelphia, Pa.—To McNichol Paving & Construction Co., for paving, with wood blocks, Arch st., between Front and 21st sts.

Pittsburgh, Pa.—By Director Department Public Works, for paving as follows: Orinoco, Federal, Warren, Robinson sts., Burchfield ave. and Volt alley, to M. O. Herron, of Pittsburgh, for $33,-240, and Murray and Panke aves., to Booth & Flinn, 1942 Forbes st., for $55,-431.

Columbia, S. C.—By City, to West Construction Co., of Chattanooga, Tenn., for paving 10 blocks with sheet asphalt, and Atlantic Bitulithic Co., Richmond, Va., three blocks with bitulithic; total amount of paving is about 3,150 sq. yds. John McNeil is City Engineer.

Pierre, S. Dak.—By State Capitol Commission, for grading and sidewalks on State grounds, to Jeffries & Roush, of Fort Pierre.

Chattanooga, Tenn.—By City, to Goodrich & Crinkley, Harriman, Tenn., for improvements to Dodds ave., from McCallie ave. to Main st., about three quarters mile.

Dallas, Tex.—By County Commissioners, for resurfacing three miles of West Dallas pike, to Collum & Bavousett, on basis of 33 cts. per yd. for hauling, and 25 cts. per yd. for laying.

San Antonio, Tex.—For grading and resurfacing with clay Boregas rd., from Elmendorf to S bridge, to Beck & Barneberg, by County Commissioners. Same firm was also awarded contract for grading Sutherland Springs rd., from end of macadam to Pirie rd.

Spokane, Wash.—To Spokane Asphalt Co., for construction of 5½ miles of Sunset blvd., by County Commissioner. This is last section to be constructed. Price is $35,532. John Costello & Co. were second highest bidders, their bid being $37,-425.

Tacoma, Wash. — For constructing Brown's Point, Dash Point blvd., 5.65 miles long, to Keasel-McDowell Logging Co., of Tacoma, for $10,849.

West Allis, Wis.—By Common Council, for paving with asphalt portions of 64th and 68th aves., to White Construction Co., of Milwaukee.

BIDS RECEIVED

Topeka, Kans.—For grading, curbing and paving with brick West Curtis st., from west line of Kansas ave. to C. R. I. & P. R.R., as follows: Capital City Vitrified Brick & Paving Co., Topeka, Kans., $8,124.97; Ritchie Bros., Topeka, Kans., $8,610.85; McGuire & Stanton, Leavenworth, Kans., $8,768.86; Hoff & Williams, Muskogee, Okla., $8,772.14; Olson & Schmidt, St. Joseph, Mo., $8,774.92; Western Paving Co., Oklahoma City, Okla., $8,868.23; F. M. Spencer, Luttjohann & Folks, Topeka, Kans., $8,878.75; Cleveland Trinidad Co., Cleveland, O., $9,-027.82; Kaw Paving Co., Topeka, Kans., $9,218.24; Roach - Manigan, Memphis, Tenn., $9,370.34; Thogmartin & Gardiner, Fort Scott, Kans., $9,535.62. Engineer's estimate, $9,367.32.

Lexington, Ky.—For rock crusher, as follows: Good Roads Machine Co., Ft. Wayne, Ind., $2,540; Austin Western Co., Indianapolis, Ind., $5,322; Acme Co., Frankfort, N. Y., $2,840; Allis-Chalmers Co., Cincinnati, O., $3,220; Power & Mining Machine Co., Cuddahy, Wis., $3,050; T. L. Smith & Co., Milwaukee, Wis., $1,725.

Brooklyn, N. Y.—For repaving with asphalt Leonard st., 9th st. and Jamaica ave., the lowest bid was that of Cranford Co., of Brooklyn, as follows: 94,700 cu. ft. asphalt wearing surface, delivered and laid, outside railroad area, no maintenance (measured in trucks as received on work), 67½ cts.; 5,100 cu. ft. of asphalt wearing surface, delivered and laid, within railroad area, no maintenance (measured in trucks as received on work), 67½ cts.; 700 cu. ft. extra binder delivered and laid (measured in trucks as received on work), 35 cts.; 100 sq. yds. old stone pavement relaid, 40 cts.; 90 cu. yds. concrete, $7.25; 290 lin. ft. new curb set in concrete, $1.40; 880 lin. ft. old curb reset in concrete, 89 cts.; 430 lin. ft. new curb set in sand, 85 cts.; 2,200 lin. ft. old curb reset in sand, 45 cts.; 100 lin. ft. new headers, 75 cts.; 100 lin. ft. old headers reset, 60 cts.; 164 noiseless covers and heads for sewer manholes, $18; total $73,-934. Totals of other bids: Barber Asphalt Co., $75,632, and Borough Asphalt Co., $80,759. Also for repaving with asphalt roadways of Schermerhorn, Livingston, Pacific and other streets in Brooklyn Borough to include 58,700 cu. ft. of asphalt wearing surface, delivered and laid, 500 cu. ft. extra binder, 70 cu. yds. of concrete, 3,100 lin. ft. new curb set in concrete, 320 lin. ft. old curb reset in concrete, 740 lin. ft. new curb set in sand, 98 noiseless covers and heads for sewer manholes, etc., Barber Asphalt Paving Co., $48,030; Cranford Co., $45,722.

New York City, N. Y.—For paving with bituminous pavement on concrete foundation E. 236th st., from Mt. Vernon to Webster ave., Bronx Borough, was that of the Barber Asphalt Co., as follows: 10,000 sq. yds. of completed bituminous pavement, and keeping in repair for five years from date of acceptance, $1.19; 1,115 cu. yds. concrete, $5; 3,570 lin. ft. curb, adjusted, 12 cts.; total, $17,903. The Waldo Contr. Co. bid for the work $19,582.

Lorain, O.—For paving on Pearl st., about 14,000 sq. yds.: Ohio Eng. Co., vitrified brick (6 bids) on different classes, $32,666 to $32,946: sheet asphalt, slag concrete stone curb (3 bids), $32,606 to $35,-686; asphalt stone fill (2 bids), $30,646 and $30,786. Asphalt Block Paving Co., asphalt block, $35,056 and $36,596. Mendleson & Winckles, vitrified brick (5 bids), $30,584 to $31,004. Also for paving 8th st., 4,550 sq. yds.: Ohio Eng. Co., brick (6 bids), $4,777 to $4,959, or with stone curb, slag concrete base, etc., $10,102 to $10,284; sheet asphalt (4 bids), $5,005 to $6,370, or with stone curb, slag concrete base, etc., $9,454 to $9,545. Asphalt Block Paving Co., asphalt block, $6,324 and $6,825, or with stone curb, $10,061 and $10,562. C. M. Osborn is City Engineer.

Seattle, Wash.—Bids for Boyer ave. paving: Independent Asphalt Paving Co., $86,158.75; Barber Asphalt Paving Co., $94,884.35; P. J. McHugh, $85,989.35; Sloane Bros., $90,170.35.

SEWERAGE

Los Angeles, Cal.—Recommendations as to construction of sewers in hilly territory in vicinity of Vermont ave. north of Fourth st., will be made by Board of Public Works to Council. Sewers, which soon will be needed in this neighborhood, will be tributary to Hollywood main sewer.

Bridgeport, Conn. — Construction of sewers in various streets has been authorized.

Lakeland, Fla.—James Nisbet Hazlehurst, Atlanta, Ga., will prepare plans for sewers to cost $75,000. C. F. Brush is City Engineer.

Lakeland, Fla.—J. N. Hozlehurst, Consulting Engineer, will shortly make surveys for sewerage and street paving.

Ashton, Ill.—Plans are being prepared by Ætna Engineering Bureau, 17 N. La Salle st., Chicago, for sewer system, disposal plant and water supply system; estimated cost, $75,000.

Woodriver, Ill.—Council is considering installation of sewerage system.

Opelousas, La.—Bids will be received until March 30, for $40,000 bonds, $500 each, 5 per cent. interest payable annually, maturing serially for 40 years; secured by special tax, first sewerage district. Address Wm. J. Sandoz, Secretary. Walter G. Kirkpatrick, Jackson, Miss., is engineer for system of sewers.

Rockville, Md.—Installation of sewerage system is being discussed.

Petoskey, Mich.—Construction of sewers in number of blocks has been authorized.

Natchez, Miss.—City will build about 0.5 miles 8-in. pipe sewer. Address T. K. Winchester, Superintendent, Natchez.

Miss., or Walter G. Kirkpatrick, Engineer, Jackson, Miss.

Hannibal, Mo.—Hall Construction Co., of Hannibal, was only bidder for contract of sewer in Palmyra ave. sewer district. Bids will be readvertised. B. F. Smiley, City Engineer.

Mound City, Mo.—Bonds in sum of $15,000 have been voted for sewerage and waterworks.

Wellsville, Mo.—Election will be held in April for voting on $18,000 bond issue for sewerage system and waterworks.

Long Branch, N. J.—Bids will shortly be asked for the construction of sewer system at Monmouth Beach.

Orange, N. J.—Bill has been passed authorizing municipalities of Orange, East Orange and Montclair to locate sewage disposal plants outside of their own territorial limits, in Belleville and partly in Bloomfield, and so keep out of trunk sewer proposition from Paterson.

Monmouth Beach, N. J.—Ordinance has been passed, providing for construction of system of sewerage; including sewage disposal plant. Jesse W. Potter is Borough Clerk.

South River, N. J.—Plans have been prepared by Clyde Potts, Engineer, Morristown, for construction of disposal plant to cost $10,000.

Trenton, N. J.—A. C. Gregory, Engineer of Sewers and Water Department, has submitted opinion to Commissioner Fell to effect that solution of Trenton's water problem is construction of filtration plant near reservoir on Pennington ave.

Buffalo, N. Y.—Councilmen have approved bills drawn by Corporation Counsel providing for issuance of $2,500,000 worth of bonds, proceeds from sale of which will be used to enlarge public trunk sewers of city.

Machanicville, N. Y.—Sum of $4,000 is required for construction of sewers.

Rochester, N. Y.—City Engineer Fisher has recommended $1,000,000 for new intercepting sewer system to be constructed in northern part of city.

Rochester, N. Y.—Meeting of Streets and Sewers Committee of Common Council has been held for purpose of discussing proposed ordinance for new outlet sewer in North Goodman st., Webster ave. and Railroad st. Estimated cost of sewer is $230,000, and it will be necessary to lay tunnel in Webster ave. as far as Bay st.

Schenectady, N. Y.—Ordinance is being considered for laying of sewers on certain streets in Second Ward.

Saluda, N. C.—Plans have been prepared for sewer system by H. G. Bailey, engineer.

Cleveland, O.—Bids will be received until 12 noon, March 18, at office of City Auditor, for purchase of $180,000 Dugway Brook west branch main sewer bonds. Thomas Coughlin, City Auditor.

Dayton, O.—Bonds in sum of $191,900 have been sold for sanitary sewers, street repairs and other improvements.

Niles, O.—Bids will be received until 2 p.m., March 20, at office of City Auditor, for purchase of $8,200 worth of bonds for construction of sewers in Pleasant ave., Kelley st., Clover st., Hunter st. and Warren ave. Homer Thomas, City Auditor.

Urbana, O.—According to plans and specifications for proposed sanitary sewerage system for Urbana, now on file in office of City Clerk, main sewer pipes will be laid entirely upon main streets.

Altoona, Pa.—Question of increasing bonded indebtedness of city to amount of $150,000 is being considered for sewer construction and street paving.

Carlisle, Pa.—At meeting of Board of Visitors to Cumberland County Almshouse and Hospital for Insane, method of drainage was condemned, and it was recommended to have sanitary conditions improved.

South Bethlehem, Pa.—At special session of Borough Council matter of building proposed sewage disposal plant at cost of $100,000, not including cost of legally obtaining land, was left in hands of Sewer and Finance Committee, Borough Solicitor and Borough Engineer. Estimated cost of improvement as proposed. is as follows: 7,875 lin. ft. of outfall sewer, ranging in size from 12-in. to 30-in., $27,595; pumping station, capacity 3,100 gal. per minute, $14,356; 18-in. cast iron force main, 3,700 ft. long, $13,282; three settling tanks, $9,209; one dosing chamber, $1,656; one sprinkling filter, $26,965; one sludge bed, $2,284; additional pipe for disposal site, $3,642; total cost, including 15 per cent. for engineering and contingencies, $98,989; total estimate and cost of constructing outfall sewer, $27,595.47. Total estimate of quantities and cost of constructing pumping station, $14,356.60. Total estimate of quantities and cost of constructing force main, $13,282.50. Total estimate of quantities and cost of constructing settling tanks, $9,209.20. Total estimate and cost of constructing dosing chamber, $1,656.63. Total estimate and cost of construction of sprinkling filters, $26,965.49. Total estimate and cost of constructing sludge beds, $2,284.36. Total estimate and cost of constructing outlet from purification plant, $3,642.56.

Dallas, Tex.—City Commision will ask taxpayers to vote on $100,000 bond issue for sanitary sewers. R. R. Nelms is Commissioner of Waterworks and Sewerage, and W. H. Holland, Mayor.

Colonial Beach, Va.—Election will be held March 14 to vote on $20,000 bond issue for sewers. Bonds will be sold immediately if election is successful.

Friday Harbor, Wash.—Installation of sewer and waterworks system is being considered, to cost about $16,000.

Spokane, Wash.—Following sewer improvements are planned: First Ward subtrunk sewer, District No. 8, estimate $13,818; First Ward subtrunk sewer, District No. 17, estimate $20,695.

CONTRACTS AWARDED

Oakland, Cal.—By Council, to John Heavey, for sewers in District 1, for $8,539, and to Wm. Heavey, for sewers in District 2, at $14,487, and District 3, at $21,294.

Pasadena, Cal.—To W. E. Moyle, at $7,793, for constructing sewer in Garfield and other streets.

Galesburg, Ill.—By Board of Local Improvements, to J. B. McAuley, at $1,880.08, for construction of Jefferson st. sewer.

Rochester, N. Y.—By Board of Contract & Supply, for new Woodbine ave. sewer, to Nicola Desiderio, for $1,875.50.

Syracuse, N. Y.—By Board of Contract & Supply, to Blanche Gaffey, at $306.25, for construction of 12-in. sewer in Walnut ave., from E. Washington to E. Water st.

Watervliet, N. Y.—To Raymond M. Booth, for proposed storm sewer system, for about $160,000.

Yonkers, N. Y.—By Board of Contract & Supply, for constructing sewer in 242d st., from Martha ave. to south city line, to E. T. Eggleston, at $1,450. Other bids as follows: F. E. Gross & Son, $1,632; Joseph Cuozzo, $2,372, and J. A. Cianfaglione, $2,500.

Dayton, O.—By Board of Control, for construction of storm water sewers in various sections of city as follows: Linden Heights, Carlisle, Hodapp and other streets, Boyd & Cook, $3,158.25; Main st., from McPherson to Adrian, Boyd & Cook, $1,164; Huston ave., Hecker to Kirchner, $1,576.50; Simms st. and alley east of Huffman ave., Hecker & Kirchner, $476.90; Foundry st., Hecker & Kirchner, $303.50; alley west of Main st., Marathon ave., Richmond ave. and Victor st., Hecker & Kirchner, $2,845.50; Leonard st., Shafer & Dill, $739.60; Chapel st., Shafer & Dill, $1,007.20; Hawthorn st., Dunbar ave. and Fitch st., Shafer & Dill, $1,307.55; Clover and Dover sts., Shafer & Dill, $730.44.

Salem, O.—By Director of Public Service, for constructing sewage disposal plant from plans of L. E. Chapin, Engineer, Frick Bldg., Pittsburgh, Pa., to W. H. Rallston, of Mt. Vernon, at following bid: Grading, earth placed in banks, 22,000 cu. yd., 25 cents; wetting and rolling, 4,000 cu. yd., 10 cents. Concrete, Class A, 204 cu. yd., $5.50; Class B, 342 cu. yd., $7.25; Class C, 53 cu. yd., $7.15; Class D, 24 cu. yd., $9; brick paving in dosing pond, 460 sq. yd., $1.20; two large gate chambers, each, $100; one small chamber, $25; pump house complete, $150; erection of pump and engine, $100; filter material, gravel, 4,100 cu. yd., $1.40; sand, 20,900 cu. yd., $1.40; sewer lines, complete, 24-in., 210 ft., 90 cents; 18-in., 660 ft., 60 cents; 15-in., 300 ft., 47 cents; 8-in., 340 ft., 50 cents; cast iron pipe laying only, 10-in., 48 ft., 10 cents; 8-in., 96 ft., 10 cents; drain piping, complete, 10-in., 292 ft., 30 cents; 8-in., 1,296 ft., 24 cents.; 6-in., 100 ft., 20 cents; 4-in., 1,190 ft., 10 cents; 3-in., 3,970 ft., 10 cents; filter troughs, complete, 8 beds, lump sum, $400; total, $48,268.

Nashville, Tenn.—By Board of Public Works, for construction of sewer in Alley 345, to E. T. Lewis & Co., of Nashville, at $4,294.66.

Fort Worth, Tex.—By City, for storm sewer construction, to Montgomery, Watts & Echols, of Fort Worth, at $3,968.

BIDS RECEIVED

New Bedford, Mass.—For centrifugal pumps and motors for intercepting sewer system were opened as follows: Southwark Foundry & Machine Co., pumps, $1,080; motors, $545—$1,625. D. Oller Engineering Co., pumps, motors, $1,490. The Goulds Mfg. Co., pumps, $824; motors, $480—$1,304. Koithan & Pryor, pumps, $892; motors, $430—$1,322. Power Equipment Co., pumps, 1,015; motors, $453—$1,468. Erie Pump & Engine Works, pumps, $962; motors, $490—$1,452. Morris Machine Works, pumps, $792. R. D. Wood Co., pumps, $630; motors, $380—$1,010. The Wilkinson Co., pumps, $630; motors, $631—$1,261. H. R. Worthington Co., pumps, $890; motors, $695—$1,585. Platt Iron Works, pumps, $528; motors, $528—$1,056.

Dayton, O.—For storm water sewers on various streets of the city Hecker & Kirchner were low bidders on four contracts, Shafer & Dill on three and Boyd & Cook on two. Hecker & Kirchner, Simms st., $476.90; alley west of Main, $2,845.50; Foundry st., $303.50; Huston ave., $1,576.50; total, $5,202.40. Shafer & Dill, Hawthorne-Dunbar, $1,307.55; Chapel st., $1,007.20; Leonhard st., $739.60; Clover and Dover, $730.44; total, $3,774.79. Boyd & Cook, Main st., $1,164; Linden Heights, $3,158.25; total, $4,325.25.

Seattle, Wash.—Bids for sewers in W. 61st st., as follows: McGuire & Moon, $5,123.55; Becker & Walker, $5,723.55; J. A. Bailey, $5,403.40; J. W. Johnson & Co., $5,548.75; Young & Uhrich, $5,378; C. Michael, $5,318; Frasca & Colusea, $5,351.25; Dahlstrom & Rodel, $6,788; Will Kopta, $4,593.50; Erickson Bros., $5,599.55; J. Ruthe, $4,985.90; T. I. Peterson, $5,304.50; Dicken & Rightmire, $5,304.50.

WATER SUPPLY

Tuscon, Ariz.—City Council is considering proposition to construct 50,000-gal. reservoir in Tuscon Mountain.

Argenta, Ark.—Mayor is considering installation of municipal waterworks with 20,000-gal. tank and Cook deep well pumping engine.

Fort Smith, Ark.—Plans are being prepared for waterworks improvements by W. Kirsted, of Kansas City, Mo.

Oxnard, Cal.—Construction of waterworks has been voted for by Board of Trustees; estimated cost, $100,000.

Sacramento, Cal.—City has had submitted to it two propositions for bringing of pure mountain water supply to city at cost of from $2,500,000 to $3,000,000.

Milliken, Col.—In order to avoid further dispute over bond issue for waterworks system and new city hall, Town Board has decided to call another election to be held April 2, at which time $15,000 in bonds will be issue. Ten thousand dollars will be spent for waterworks system and balance for city hall.

Hartford, Conn.—Finance Board will submit to voters on April 2 appropriation of $50,000 for east side pumping station.

Georgetown, Del.—Georgetown water plant which will be sold at public sale shortly, has been appraised by former Sheriff Charles T. Purnell and Prothonotary N. Wallace White at $25,000. Many citizens favor purchase of plant by town, and proposition will probably be put to vote of people by special act of Legislature.

Bradentown, Fla.—New pump will be installed and new water mains laid.

Helena, Ga.—Plans are being prepared for waterworks plant for city by J. B. McCrary; cost, $20,000.

Pavo, Ga.—City will vote on $4,000 bond issue for equipping waterworks plant.

Pooler, Ga.—Construction of waterworks is under consideration; estimated cost, $8,000.

Council Bluffs, Ia.—Water Board has decided to let contracts for purchase of 250 meters to be given test on Council Bluffs water system with idea in view of purchasing several thousand to be installed in all houses where they are not now in use.

Stites, Idaho—Council is considering construction of waterworks system.

Ashton, Ill.—Plans are being prepared by Ætna Engineering Bureau, 17 N. La Salle st., Chicago, for water supply system, sewer system and sewage disposal plant; estimated cost, $75,000.

Moline, Ill.—It is said that City Council selected Dabney Maury, of Peoria, to prepare plans for improvements to waterworks.

Woodriver, Ill.—Council is considering installation of waterworks system.

Central City, Ia.—Sum of $10,000 has been voted for construction of waterworks system.

Moran, Kan.—City will install waterworks at cost of $15,000.

Paducah, Ky.—City Council of Murray

has sold $25,000 worth of bonds issued for construction of waterworks system to W. E. Covington, of Paducah.

Herman, Mo.—City will install waterworks system.

Mound City, Mo.—Bonds in sum of $15,000 have been voted for waterworks and sewerage.

Wellsville, Mo.—Election will be held in April for voting on $18,000 bond issue for waterworks and sewerage system.

North Platte, Neb.—At special election people voted for purchase of North Platte Water Works, funds to be obtained from proceeds of $100,000 bonds issued October, 1909, for construction of new system.

Jersey City, N. J.—Street and Water Commissioners have instructed Chief Engineer Van Keuren to prepare plans and specifications for new water pipe line to east side of Greenville district, line to run through Cornelison ave. to Garfield ave., and thence through Greenville, with connecting lines through various cross streets. Engineer Van Keuren will estimate cost of the new pipe line and Board will advertise for bids.

Perth Amboy, N. J.—Propositions of installing auxiliary pump to give increased water pressure in western and northwestern parts of city and to extend new 24-in. water main across meadows south of Raritan River, have been taken up by members of Board of Water Commissioners.

Ramsey, N. J.—Plans have been prepared for installation of waterworks system to cost about $58,000.

Woodbury, N. J.—City Council is considering proposition to install filtration plant at waterworks.

Bellmore, L. I., N. Y.—Erection of municipal water plant is being discussed.

Yonkers, N. Y.—Comptroller Miller has sold $80,000 water bonds and $95,000 local improvement bonds to W. A. Read & Co., their bid being $103.03.

Yonkers, N. Y.—Secretary has had instructions to advertise for seven tons of special castings for Water Bureau; also for bids for filter beds.

Durham, N. C.—Work of constructing new water plant for supplying city will be begun May 1. Plans and specifications have been practically completed. Pumping plant with capacity of 4,000,000 gals. per day will be installed. To house machinery necessary for such plant, building will be constructed of reinforced concrete. Filteration plant, with capacity of 6,000,000 gals. per day, will be installed.

Saluda, N. C.—Plans have been prepared for waterworks system, by H. G. Bailey, Engineer.

Muskogee, Okla.—Council has advertised for bids for purification and softening plant to be operated in connection with pumps out on river; estimated cost, $20,000.

Muskogee, Okla.—Two miles of 24-in. water main will be laid under direction of City Water Department officials as result of motion made in Council by Commissioner Gulick who argued that all work, heretofore done on contract system but which can legally be done by city, be done in that way.

Oklahoma City, Okla.—Plans have been adopted by City Commission for improvements to waterworks, to cost about $30,000.

Cornelius, Ore.—Plans are being prepared for installation of gravity water system.

Klamath Falls, Ore.—R. A. Emmitt, former Postmaster of Klamath Falls, has guaranteed City Council to put in new waterworks system, bringing water from Aspen Lake Springs, in mountains 25 miles north of here, with flow of 500,000 gal. per day, for $135,000. Council will take matter under advisement.

Shenandoah, Pa.—Ordinance to increase borough indebtedness $35,000 for purpose of constructing reservoir and otherwise improving the borough water facilities is being considered.

Camden, S. C.—Bond issue of $100,000 is being considered for waterworks and electric light plant. J. J. Goodall is City Clerk.

Cheraw, S. C.—Issuance of $47,000 bonds is being considered for waterworks and for about 6½ miles of water mains.

Hartford, S. Dak.—Bond issue of $2,000 has been authorized for installation of waterworks.

Dallas, Tex.—City Commission will ask taxpayers to vote on $400,000 bond issue for waterworks improvements. R. R. Nelms is Commissioner of Waterworks.

Dallas, Tex.—James H. Fuertes, of New York, hydraulic expert employed by city as consulting engineer for installation of water purification plant, has submitted his report to city authorities. This provides for establishment of mechanical filtration plant at Turtle Creek pumping station and use of sulphate of lime and sugar iron in settling basins there to soften and clarify raw water; estimated cost, $200,000.

Terrell, Tex.—City Commission has given notice of bond election to be held in 30 days for voting on $20,000 waterworks improvement bonds.

Brigham City, Utah—Mayor R. L. Fishburn and City Council have decided to call special election for purpose of voting on proposition to bond city for $40,000 to be used for waterworks purposes.

Salt Lake City, Utah—Plans for artesian well system for Liberty Park are being worked out by Superintendent of Waterworks to relieve draft upon city water system by park. Plan contemplates installation pump which will force water from numerous wells through pipes which will distribute it.

Colonial Beach, Va.—Election will be held March 14 to vote on $17,000 bond issue for waterworks. Bonds will be sold immediately if election is successful.

Culpeper, Va.—City is considering installation of mechanical filtration plant.

Centralia, Wash.—Ordinance providing for construction of municipal gravity water system in Centralia, passed its first reading before City Commission. Ordinance provides for election to vote bonds for building of system, and Tuesday, April 23, was set at date of election.

Friday Harbor, Wash.—Installation of waterworks and sewer system is being considered, to cost about $16,000.

Winlock, Wash.—Plans are being considered for construction of waterworks system.

CONTRACTS AWARDED

Orland, Cal.—By Trustees, for construction of pump pit and foundation for Orland water system, to Peal & Gay, at $1,325. Other bids as follows: The Western Engineering & Water Supply Co., $1,750; Burlinger & Peters, $1,413.50; J. Smith, $1,295.

Montrose, Col.—To Hoshomota Construction Co., of Denver, for excavating 17 miles of main ditch and four miles of laterals for irrigation in Montrose County, for about $110,000.

Dayton, O.—By Board of Control, for cast iron pipe for Water Works Department, to James B. Clow & Son, of Chicago, at $7,700.

Dubuque, Ia.—By Board of Water Works Trustees, for sinking well at Eagle Point pumping station, as follows: To sink well, Schon & Coleman, of Peoria, Ill.; to install the machinery, Key City Iron Works, of Dubuque; construction of brick building about the well, 18 x 14 ft. 6 in., Henry Mueller, of Dubuque; steel casing for well, Springfield Boiler Works; total cost about $14,000.

Sioux City, Ia.—For new pump to be installed at Main st. pumping station, to Snow Steam Pump Works, of Buffalo, N. Y., for $11,895.

Cornwall, N. Y.—By Village, for constructing of addition to storage reservoir, from plans of C. H. Smith, of Middletown, to Abner M. Harper, Inc., Newburgh; cost, about $25,000.

Mount Kisco, N. Y.—For water main extension on Boltis st., to G. E. Ganun, of Mount Kisco, at bid of 93 cents per ft.

Peekskill, N. Y.—To M. C. Tompkins, for clearing site of proposed reservoir at Wicopee, at bid of $1,800.

Wellston, Okla.—By City, for construction of waterworks, to Z. W. Smith & Son, of Oklahoma City, Okla. W. H. Biddle is Town Clerk.

Manhasset, L. I., N. Y.—By Board of Water Commissioners of Manhasset-Lakeville Water District, for waterworks from plans of Johnson & Fuller, 150 Nassau st., N. Y. City, to W. G. Fritz, of Dover, N. J., at following bid: Two 8-in. driven well, 50 ft. deep, casing and strainer, $525;50 lin. ft. additional depth of driven wells below 50 ft. below surface, $5.20; pumping station complete, lump sum, $4,500; triplicate, fuel oil engines, triplex pumps and accessories, lump sum, $8,800; oil tank and accessories, lump sum, $1,110; stand pipe and foundation, lump sum, $7,610; furnishing and laying 4-in. cast iron pipe, 2,400 lin. ft., 50 cents; 62,700 lin. ft. 6-in. cast iron pipe, 67 cents; 32,500 lin. ft. 8-in. cast iron pipe, 91 cents; 9,400 lin. ft. 10-in. cast iron pipe, $1.20; total, including 170 hydrants and 177 valves, $114,189. Totals of other bids: The Harrison Construction Co., 837 broad st., Newark, N. J., $115,452; Gifford, Both & Weston, 355 Fulton st., Jamaica, N. Y., $118,253; R. G. Breckenridge & Co., 23 Walnut ave., Rockville Center, L. I., N. Y., $122,604; Clancy & Van Alst, 401 Broadway, Long Island City, N. Y., $127,493; Hicks Johnson Construction Co., 150 Jackson ave., Long Island City, N. Y., $130,365; A. M. Harper, Inc., 56 Second st., Newburgh, N. Y., $133,212; Cas. Ippolito, 83 Cone st., Orange, N. J., $138,419; L. B. Jacobs, Newark, Del., $140,094; Henry E. Fox, 81 E. 125th st., N. Y. City, $143,170; Cooper & Evans Co., 220 Broadway, New York City, $143,830; United Engineering & Construction Co., 17 W. 42d st., N. Y. City, $149,758; Walton Construction Co., 147 E. 125th st., N. Y. City, $150,231; Murphy Bros., 25th and Cropsey aves., Brooklyn, $156,480, and J. L. Sigretto & Co., 1455 Woodhaven ave., Woodhaven, L. I., $184,438.

Coatesville, Pa.—By Council, to American Water Softener Co., Philadelphia, for pressure filter and sterilizing plant.

Richmond, Va.—To Glamorgan Pipe & Foundry Co., of Lynchburg, for nozzle fire hydrants, cast iron pipe and special castings, for about $18,652.

Rocky Mount, Va.—By Chairman of Special Water Commission, for boring well, to Stothoff Bros., of Flemington, N. J., for about $3,200.

BIDS RECEIVED

New York, N. Y.—For furnishing, delivering and laying water mains in 1st, 5th and Park aves., in E. 23d, E. 24th, E. 25th, E. 29th, E. 84th, E. 93d and Exterior sts., Borough of Manhattan, and the lowest bid was that of the North End Contr. Co.; it bid for 900 tons c.-i. pipe, $24; 100 tons c.-i. castings, $50; 60 tons special castings, $36; 14,000 cu. yds. earth excav., 50 cts.; 20,000 lin. ft. 12-in pipe to lay, 37 cts.; 1,200 lin. ft. 6-in. pipe to lay, 15 cts.; 3,500 sq. yds. granite block pavement, $2.15; total cost, including valves, hydrants and other appurtenances, $75,992. Totals of other bids: L. D. Gregory, $115,933; Walton Contr. Co., $90,753; Beaver Engr. & Contg. Co., $95,415; New York & Portchester Contg. Co., $113,224; Nelson & Dowling, $77,720; Henry E. Fox, $89,885. The following are the bids opened same time and place for furnishing, delivering and laying water mains and appurtenances from City Island to Hart's Island, Rodman's Neck to City Island and across Eastchester Bay at Pelham Bridge, and the lowest bid was that of John Cornwell, Jr., 69 E. 127th st., at $59,957. Other bidders: Merritt & Chapman, $79,739; F. Wardwell, $63,936; Henry E. Fox, $67,092, and New York Submarine Contr. Co., $65,262.

Seattle, Wash.—For constructing water mains on N. 41st st., and the lowest bid is stated to have been submitted by J. L. Ritchie, 1241 18th ave., N. Seattle, at total of $74,298, including pipe, valves, hydrants, etc. Some of principal items in this bid are as follows: 8,330 ft. 30-in. c.-i. pipe, 1.03 in. thick, $7.12; 1,050 ft. 30-in. c.-i. pipe, 1.125 in. thick, $7.79; 912 ft. 8-in. c.-i. pipe, $1.23. Totals of other bids: Graff Constr. Co., $79,768; C. J. Johnson, $81,841; Jahn Contr. Co., $76,028; Ward & Scherrer, $84,464; Ferguson-Cott Co., $79,618; Geo. C. Dietrick & Co., $76,761; Sparger Concrete Co., $81,878; Haydon & Son, $80,717; Sound Constr. & Eng. Co., $88,825; Krogh & Jessen, $85,085; Northwest Constr. Co., $96,377; Cummings & Keihl, $86,999.

LIGHTING AND POWER

Greeley, Col.—D. A. Camfield, president of Greeley Hydro-Electric Co., has announced that they would make application to City Council for franchise to sell to Greeley current for heat, lighting and power purposes.

Wilmington, Del.—With idea of bettering lighting of city streets, Board of Directors of Street and Sewer Department have arranged for installing of 250 Tungsten lights instead of present arcs now in use.

Daytona, Fla.—Bond for gas franchise has been filed with City Clerk by Schantz Electric, Ice & Water Co., and survey of streets are being made for estimates on piping and operations toward laying of pipes and erection of plant.

Mount Dora, Fla.—Town Council has granted franchise to Eustis Light, Water & Power Co., of Eustis, Fla., to furnish electricity.

Macon, Ga.—Georgia Light & Power Co. has petitioned City Council for franchise to distribute electrical power and to erect conduit and transmission stations and power house.

Lynn, Ind.—Contract has been signed by town authorities at Lynn and Citizens' Water & Light Co., of Winchester, for furnishing light at Lynn. Project for municipal ownership of electric plant fell through.

Richmond, Ind.—Proposition of administration to expend $70,000 for construction and equipment of addition to municipal light plant is being favorably discussed.

Des Moines, Ia.—Proprietors of retail stores in business section have appeared before Council and asked city to take over cost of controller lighting system. Cost of system to merchants is about $45,000 a year.

Fort Scott, Kan.—Ordinance has been passed granting to the Citizens Electric Co., Kansas corporation, for period of 30 years, right to install, operate and maintain electric light and power plant or plants in city. W. E. Brooks is Mayor. G. N. Sanford, City Clerk.

Homer, N. Y.—Construction of municipal lighting plant is being considered.

Hebron, N. Dak.—Company has been organized, all members being Hebron citizens, for purpose of building and maintaining electric system to furnish light, heat and power to village of Hebron and its inhabitants. Village Board has granted franchise for period of 25 years to new company, which will be known under name of Theo. Bolke & Co.

Cleveland, O.—Bids will be received until 12 noon, April 8, at office of City Auditor, for purchase of $1,000,000 electric light coupon bonds. Thomas Coughlin, City Auditor.

Shilon, O.—Installation of electric lighting system is being considered.

Woodward, Okla.—City will establish electric light plant; estimated cost, $27,000.

Portland, Me.—Work will shortly be started on continuation of installation of cluster street lights on ornamental iron poles on Congress st., in accordance with order passed by City Council.

Omaha, Neb.—Business men are urging ctiy to close contract with electric lighting company to furnish light for two or three years more.

Cincinnati, O.—It has been decided at meeting of Bond Mill Welfare Association held recently to recommend to Board of Public Service installation of Tungsten light to be used in street lighting of Bond Hill, except Reading rd. and Reading blvd., which should carry improved arc lights.

Richlandtown, Pa.—Council wishes electric light furnished from plant in Quakertown, and committee has been appointed to confer with Quakertown Council.

South Bethlehem, Pa.—Ordinance has been passed granting franchise to Moravia Electric Light, Heat & Power Co., of Bethlehem, Pa., right to occupy streets and alleys of Borough of Bethlehem, in Lehigh and Northampton Counties, with poles and wires for purpose of supplying light, heat and power by electricity to public.

Camden, S. C.—Bond isue of $100,000 is being considered for electric light plant and waterworks. J. J. Goodall is City Clerk.

Cheraw, S. C.—City is considering voting on issuance of $8,000 bonds for electric light plant improvements.

Luling, Tex.—City has granted franchise to Karnstadt, Wade & Stair for electric light and power plant.

CONTRACTS AWARDED

Black Rock, Ark.—By City Council, with L. P. Caldwell, Batesville, Ark., to improve electric light plant.

Napa, Cal.—By City Council for lighting streets from March 1 to Sept. 1, to Pacific Gas & Electric Co.

Gunnison, Col.—By Town Trustees, for furnishing material and constructing water power plant from plans of Burns & McDonnell, Scarrit Bldg., Kansas City, Mo., to Central Construction Co., of Colorado Springs, for $67,500. Other bidders: Fisher-Dempsey Construction Co., Pueblo, $83,900; the Peter O'Brian Construction Co., Joplin, Mo., $80,120; T. C. Brooks & Son, Jackson, Mich., $78,600; Marshall Bros., Las Animas, Col., $77,950, and C. L. Wilbur, Gunnison, $72,000.

Winsted, Conn.—By Borough, to Winsted Gas Co., for street lighting for period of five years. Contract calls for complete new lighting system and provides for about 140 Mazda Tungsten lamps of 60 candlepower, and 75 magnetite arc lamps.

Garrett, Ind.—By City, for steam engine driven generator unit, to Ft. Wayne Electric Works, of Ft. Wayne, for $5,255.

Brooklyn, N. Y.—For furnishing generator sets and controller panels for delivery at New York Navy Yard, to Ridgeway Dynamo & Engine Co., Ridgeway, Pa., for $13,788.

Canastota, N. Y.—By Board of Trustees, to Central New York Power Co., for lighting of streets of Canastota by electricity during ensuing five years. Contract calls for annual expenditure of $5,484 for lighting, divided as follows: Fifty-eight arcs at $75 each, 63 40 watt Tungsten at $18 each. Village has the privilege of rescinding contract at end of year, while contract binds lighting company for five years.

Littleton, N. C.—By City, to C. & W. Electric Co., Henderson, N. C., to erect lighting plant, including apparatus, engine, boilers, etc. C. E. Fairbanks is consulting engineer, 417 American National Bank Bldg., Richmond, Va.

Hamilton, O.—By Infirmary Board, for heating plant at Butler County Infirmary, to Love, Roth & Nulsen Co., at $9,500.

Pittsburgh, Pa.—To Allegheny County Light Co., for lighting first 20 wards of city at following schedule: Arc lights, overhead circuit, $51.50 per light; arc lights, underground circuit, $72.50; Tungsten lamps, 100-watt, overhead circuit, $23; 100-watt, underground circuit, $43; 250-watt, overhead, $37; 250-watt, underground circuit, $38.

Saskatoon, Sask., Can.—To George Cutter Co., South Bend, Ind., to supply 420, five-light boulevard posts for city.

FIRE EQUIPMENT

San Francisco, Cal.—Commissioners have decided to ask Supervisors to incorporate in budget for coming fiscal year appropriation of $1,000,000 to defray cost of substituting motor apparatus for vehicles at present in use.

Hartford, Conn.—Board of Fire Commissioners has ordered new $1,800 repeater for fire alarm service.

Lincoln, Ill.—Auto fire truck will be purchased by City Council.

Dubuque, Ia.—Bids will shortly be advertised for auto fire apparatus.

Marshalltown, Ia.—Purchase of auto fire engine is being considered.

Sioux City, Ia.—Auto fire engine will be purchased by City Council.

Shreveport, La.—It is reported that bids will shortly be asked for two auto fire engines, one combination chemical and hose wagon and one motor tractor.

Abington, Mass.—Appropriation of $6,000 will be asked for purchase of combination auto truck.

Middlesboro, Mass.—Purchase of 2,000 ft. of fire hose has been authorized.

St. Clair Heights, Mich.—Purchase of 750 ft. of fire hose and another hose cart has been authorized by Council.

Thief River Falls, Minn.—More fire apparatus will probably be purchased.

St. Paul, Minn.—Fire Board has rejected all bids for third size steam fire engine and same will be readvertised.

Reno, Nev.—Purchase of auto combination chemical engine and hose wagon is recommended.

East Orange, N. J.—Board of Fire Commissioners has asked Finance Committee of City Council to recommend appropriation of $59,000 for their department.

Paterson, N. J.—Erection of fire house in thoroughfare at North Third and Clinton sts. has been authorized.

Newburgh, N. Y.—Fire alarm wires on Broadway will be put under ground, if report of Fire Department Committee is approved by City Council. Cost of work will be $1,000.

New York City, N. Y.—Central fire alarm system station will be erected in Central Park at cost of $80,000.

Syracuse, N. Y.—Plans for erection of new fire house in 13th Ward, adjoining Onondaga Park on south, are being discussed.

Springfield, O.—Appropriation of $30,000 for purchase of auto fire apparatus is being urged by Chief S. F. Hunter.

Toledo, O.—New automobile will be purchased for Chief Mayo of Fire Department.

Youngstown, O.—City is considering $75,000 bond issue for purpose of motorizing Fire Department.

Chester, Pa.—Members of the Good Will Fire Co. have decided to erect annex to present structure for accommodation of fire engine that has been advocated for service in First Ward for sometime past.

Mauch Chunk, Pa.—Erection of new hose house in Second Ward is being considered.

Philadelphia, Pa.—Sum of $51,520 will be spent for purchase of new fire equipment.

Woonsocket, R. I.—Committee has voted to recommend passage of resolution appropriating sum of $14,000 for building of new fire station in Social district.

Woonsocket, R. I.—Appropriation of $14,000 has been authorized for erection of new fire station at Social and Elm sts.

Columbia, Tenn.—Purchase of auto combination fire truck is authorized; estimated cost, $5,000.

Jackson, Tenn.—City Council is considering purchase of auto engine.

Dallas, Tex.—City Commision will ask taxpayers to vote on $125,000 fire station bonds. F. W. Bartlett is Fire Commissioner.

Fort Worth, Tex.—Purchase of 1,000 ft. of fire hose has been authorized.

Phoebus, Va.—Purchase of 1,000 ft. of fire hose is being considered.

Milwaukee, Wis.—City is considering purchase of fire apparatus and police alarm system, to cost about $30,000.

Plymouth, Wis.—City will purchase 1,000 ft. of fire hose and two hose carts.

Racine, Wis.—Installation of motor fire apparatus is being discussed.

CONTRACTS AWARDED

Macon, Ga.—By Fire Committee of City Council, to La France Co., for three automobile fire fighting machines, consisting of two engines and truck. The apparatus will cost city sum of $21,000, paid in installments.

Philadelphia, Pa.—For new combination station and fire house at 55th and Pine sts., by Director Porter, to John W. Emery, at $86,429.

BIDS RECEIVED

Niagara Falls, N. Y.—For furnishing one automobile combination pumping fire engine, one combination chemical and hose motor car and one Fire Chief's auto: Werick Bros. Motor Car Co., Buffalo, N. Y., Fire Chief's auto, $1,775; Wm. McVittie, Niagara Falls, N. Y., Fire Chief's auto, $2,800; Fire Chief's auto, $2,850; Peter Lammerts, Niagara Falls, N. Y., Fire Chief's auto, $1,900; combination pumping fire engine, $11,000; combination pumping fire engine, $8,500; combination chemical and hose motor car, $5,500; Kanawha Chemical Fire Engine Mfg. Co., New York, N. Y., Chief's auto, $3,500; combination chemical and hose motor car, $5,000; combination chemical and hose motor car, $5,500; combination chemical and hose motor car, $6,500; the Ahrens-Fox Fire Engine Co., Cincinnati, O., combination pumping fire engine, $10,000; the Seagrave Co., Columbus, O., combination chemical and hose motor car, $5,100; combination chemical and hose motor car, $5,350; Victor Motor Truck Co., Buffalo, N. Y., combination pumping fire engine, $10,000; combination pumping fire engine, $6,750; combination pumping fire engine, $7,250; combination chemical and hose car, $5,500; American-La France Fire Engine Co., Elmira, N. Y., combination pumping fire engine, $7,500; combination pumping fire engine, $8,500; combination pumping fire engine, $9,500; combination chemical and hose car, $5,500; the Webb Motor Fire Apparatus Co., St. Louis, Mo., combination pumping fire engine, $8,500; combination chemical and hose car, $5,000; Robinson Fire Apparatus Mfg. Co., St. Louis, Mo., combination pumping fire engine, $9,000; combination chemical and hose car, $5,500; Fire Chief's auto, $3,200; Edgar C. Messersmith, Buffalo, N. Y., Fire Chief's auto, $2,000. Thomas H. Hogan, Clerk.

BRIDGES

Birmingham, Ala.—City will erect concrete viaduct over 12th ave. at 27th st.

Orland, Cal.—Concrete arch bridge will be erected across Stony Creek, mile north of Orland. County Engineer L. C. Stiles.

Hollister, Cal.—Board of Supervisors will erect bridge across Pajaro River at point south of Betabel.

Wilmington, Del.—Levy Court will erect new bridge across Christiana River. It will be built on original site selected but western approach has been changed from Fourth st. to Third st. Consulting Engineer Greiner has prepared plans and specifications, and builders will be asked for bids in near future.

Morgan City, La.—Erection of bridge to connect Avoca Island with Morgan City has been authorized.

New Orleans, La.—City is considering replacing Magnolia bridge over New Basin Canal with swing bridge to cost $25,000. W. J. Hardee is City Engineer.

Duluth, Minn.—St. Louis County will spend in neighborhood of $270,000 this year for bridges and roads.

Kansas City, Mo.—City Council has approved of contract with Waddell & Harrington, of Kansas City, for design, plans, specifications and supervision of construction of proposed viaduct for 12th st. traffic-way. Date of opening bids not set; cost, $600,000; plans will be ready about April 1.

St. Louis, Mo.—Active work on proposed 12th st. viaduct will shortly commence, according to announcement by Maxime Reber, president of Board of Public Improvements. Viaduct will extend from Spruce st. to Chouteau ave. and at both approaches will be as wide as 12th st. Cost will be $300,000. Concrete will be used in construction. Plans for this viaduct, with others, were commenced more than six years ago. At that time bond

issue of $1,000,000 was voted for that purpose. Out of that fund King's Highway viaduct has been built. Two other viaducts will be built out of bond issue fund in addition to 12th st. structure. One over Broadway at entrance to Riverside Park and another at entrance to Carondelet Park at end of Grand ave. Construction on latter two viaducts will commence shortly after work is started on 12th st. structure.

Albany, N. Y.—Appropriation is being considered for construction of new bridge over Erie Canal at Beech st.; estimated cost, $45,000.

Albany, N. Y.—Assemblyman Loomis, of Lewis County, has introduced bill making appropriation of $45,000 for concrete bridge over Black River Canal at Lyons Falls. Canal is to be improved under bill from Mr. Loomis appropriating $75,000, so that it will be open for navigation between Boonville and Carthage.

Kingston, N. Y.—Committee has been appointed to consider building of bridge from Rondout to Sleightsburgh.

Mt. Holly, N. C.—Gaston County and Mecklenburg County are considering construction of bridge over Catawba River, to cost about $20,000.

Dayton, O.—Bonds in sum of $101,900 have been sold for construction of bridge over Stewart st. canal, street repairs and sanitary sewers.

Hamilton, O.—Prosecutor M. O. Burns has received from Attorney-General Hogan, at Columbus, that it would be necessary to re-advertise for bids and reaward contract for new bridge over canal at Grand blvd.

Woonsocket, R. I.—Committee has voted to recommend passage of resolution appropriating sum of $36,000 for building of new bridge on Bernon st.

Woonsocket, R. I.—Appropriation of $36,000 has been authorized for construction of new Bernon st. bridge.

Chattanooga, Tenn.—Bids for new reinforced concrete viaduct on McCallie ave. will be received as soon as date for this can be fixed and necessary advertisements submitted. Engineer, Wilbur J. Watson, of Cleveland, O., estimates cost of bridge at $126,000.

Huntsville, Tex.—Walker County will erect five steel and several creosote wooden bridges.

Norfolk, Va.—Widening of Yarmouth bridge over Smith's Creek is being discussed.

Richmond, Va.—Resolution will be considered for erection of new bridge to replace old Free Bridge.

Tacoma, Wash.—Voters will be asked to vote on proposed issue of $35,000 for lower deck to new bridge on 11th st.

CONTRACTS AWARDED

Osceola, Ark.—To Stites Steel Bridge Co., St. Louis, Mo., for construction of 22 steel bridges.

Jacksonville, Fla.—By Board of Commissioners of Duval County, to Oswego Bridge Co., Macon, Ga., for construction of reinforced concrete bridge over Cracker swamp.

Marietta, Ga.—To Virginia Bridge & Iron Co., of Atlanta, for construction of bridge over Power Creek.

Carroll, Ia.—By Board of Commissioners of Carroll County, to Standard Bridge Co., Omaha, Neb., for construction of steel and wooden bridges for year 1912.

Estherville, Ia.—By Board of Supervisors of Emmet County, to N. M. Stark & Co., Des Moines, at $5,700, for construction of reinforced concrete bridges.

Kearney, Neb.—To Omaha Structural Iron Co., of Omaha, for constructing bridges in Buffalo County during 1912.

Salisbury, N. C.—By Bridge Committee, to Virginia Bridge & Iron Co., Roanoke, Va., at $5,955, for building steel bridge with concrete abutments across South River, between Rowan and Davie Counties, at Lindsay's Mill.

Cincinnati, O.—For constructing concrete bridge and fill on River rd. at Dunlap Creek rd., Colerain Township, to M. Hanlon, for $5,172.

Cincinnati, O.—By Board of Commissioners of Hamilton County, to Chas. F. Runck, Jr., First National Bank Bldg., at $12,300, for construction of concrete bridge in Carthage.

Pittsburgh, Pa.—By Board of Commissioners of Shaler Township, for constructing Atherton ave. bridge, to Cranford Construction Co., for $93,128.

Kimberly, Wis.—By Village, for erecting bridge over Fox River, to Waukesha Steel Structural Co., of Waukesha, for $26,560.

Sturgeon Bay, Wis.—To Clemens A. Ries, of Sheboygan, for erection of new bridge at this city, at $12,635. Other bids were: A. Green, $12,985, and Greilling Bros., $14,734, both Green Bay contractors.

Sturgeon Bay, Wis.—By City Council, to Clemens A. Ries, Sheboygan, Wis., at $12,635, for construction of bridge.

BIDS RECEIVED

Seattle, Wash.—Bids for overhead footbridge on Pike st., as follows: J. A. McEachern Co., $7,946.95; T. H. Ryan, $7,531.65; Jahn Constr. Co., $7,131; E. Johnston, $7,928.90; Calling & Sunden, $8,437.50; M. C. Hinemann, $7,064.90; Weymouth Constr. Co., $7,193.40; A. S. Peterson, $8,653.45.

MISCELLANEOUS

Gadsden, Ala.—Erection of crematory at old waterworks plant is being considered.

Los Angeles, Cal.—City and county officials have held joint conference in city hall to consider proposed plan for establishment of county free library and consolidation of it, when organized, with Los Angeles Public Library.

San Francisco, Cal.—Construction of tunnel through Fillmore st. hill, from Sutter to Filbert st., has been recommended and City Engineer will be asked to draw plans and furnish estimates for construction of such tunnel.

San Leandro, Cal.—Mass meeting will be held to ascertain wishes of voters in regard to proposed bond issue for $50,000 for local improvements.

Hartford, Conn.—Finance Board will submit to voters two propositions on April 2 as follows: $40,000 for Colt Park pavilion, and $25,000 for police signal system.

Waycross, Ga.—More improvements are contemplated in city's parks, so that children will have better and larger playgrounds.

Chicago, Ill.—Plans of proposed outer harbor have been approved by Gen. Wm. H. Bixby, War Department's Chief Engineer; estimated cost, $5,000,000.

Taunton, Mass.—Appropriation has been made for purchasing spraying machine.

Detroit, Mich.—Establishment of incineration plant has been approved.

Detroit, Mich.—Board of Commerce Committee has approved of proposed expenditure of $500,000 for new municipal building and site.

Greenwood, Miss.—It is reported that competive plans for new jail are wanted. Address the Chancery Clerk.

St. Louis, Mo.—Resolution has been introduced asking Board of Public Improvements for estimates on public comfort stations at various parts of city.

Hackensack, N. J.—Bergen County Board of Freeholders have decided to buy for use of Superintendent of Weights and Measures William E. Rodgers an automobile valued at $1,250.

Springfield, N. J.—With view to erecting municipal building, Township Committee is planning to hold special election within few months to ask voters to authorize issuance of bonds for structure; cost from $18,000 to $29,000.

New York City, N. Y.—Health Commissioner Lederle will ask for $200,000 appropriation to establish tuberculosis sanatorium within 30 miles of city; also $105,000 for improvements to sanatorium at Otisville is recommended.

Fonda, N. Y.—Board of Supervisors of Montgomery County must decide before April meeting of State Prison Commission whether it will remodel county jail at Fonda at expense of about $40,000, or build new jail for about $60,000.

Poughkeepsie, N. Y.—Purchase of auto truck has been recommended for use of Board of Public Works; cost, $2,500.

Poughkeepsie, N. Y.—City Engineer has been authorized to purchase two spraying outfits to be used in spraying trees of city.

Rochester, N. Y.—Question of purchasing City Hall from city, and remodeling it into addition to Court House, and have city erect new City Hall, is being discussed.

Cleveland, O.—Bids will be received until 12 noon, March 18, at office of City Auditor, for purchase of $18,000 and $145,000 park coupon bonds. Thomas Coughlin, City Auditor.

Dayton, O.—New central police station will be erected on site occupied by present structure.

Altoona, Pa.—Construction of garbage disposal plant, to cost $20,000, is being discussed.

Chester, Pa.—City Engineer Bonsall G. Ladomus, of this city, has submitted plans of proposed new public wharf in west end. Plans were approved and permit issued for proposed river front improvement, sum of $15,000 having been set aside of $600,000 loan for this purpose.

Erie, Pa.—Establishment of public comfort stations about city is being considered.

Lansdowne, Pa.—Citizens of Lansdowne will on May 18 vote on loan bill for $75,000 for making permanent improvements.

Philadelphia, Pa.—Recreation Board has approved of plans for new playgrounds and recreation parks in Athletic square, at 26th and Jefferson sts.

Providence, R. I.—City Council has adopted resolution directing City Solicitor to apply to General Assembly for enabling act allowing city to issue bonds to sum of $75,000 for new building, and for alterations and improvements at Dexter Asylum.

York, S. C.—Bids will be received until 12 noon, March 20, by T. W. Boyd, Supervisor of York County, for purchase of $60,000 township bonds.

Dallas, Tex.—City Commission will ask taxpayers to vote on $475,000 bond issue for City Hall. J. E. Lee is Commissioner of Public Property.

Dallas, Tex.—City hospital building bonds have been sold by Mayor and Commissioners to Fifty-third National Bank of Cincinnati. The bank bid $100,000 and $1,410 premium.

San Antonio, Tex.—County Auditor has been ordered to advertise for bids for three 400-gal. oil wagons and one oil distributor by County Commissioners. These wagons will be used in keeping roads oiled and in good condition.

Seattle, Wash.—Municipal and port district bond issues aggregating $8,725,000 have been authorized by voters. In addition $3,100,000 was voted for other harbor improvements, $500,000 for park work, and $125,000 for municipal tuberculosis hospital.

Milwaukee, Wis.—Sum of $16,000 will be spent by Park Board in various improvements to parks.

CONTRACTS AWARDED

Lexington, Ky.—By City Jail Committee of General Council, to Acme Road Machine Co., of Frankfort, N. Y., for rock crusher at jail, at $2,840.

Jersey City, N. J.—By Police Commissioners, for automobile patrol wagon, to George W. Blakeslee, at $2,000.

Rochester, N. Y.—For furnishing touring car for Commissioner of Public Works Herbert W. Pierce, to Mabbette & Bettys Co., for $1,289.75.

BIDS RECEIVED

Winsted, Conn.—For garbage collection contract. Seven estimates were received, lowest of which was that of E. H. Holton, $1,200. All of bids, with one exception, were for collection of ashes and garbage jointly, and were as follows: Joseph McGowan, garbage and refuse, $1,800; garbage only, $900; Newell A. Ives, $2,100; George W. Newitt, $2,000; E. P. Holton, $1,200; William E. Franz, $1,950; E. P. Lamphier, $2,000; M. L. Danehy, $1,500.

TOO LATE FOR CLASSIFICATION

BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK.	ADDRESS INQUIRIES TO
			STREET IMPROVEMENTS.	
New York.....	New York.....	Mar. 20, 10.30 a.m..	Furn. 75,000 gal. emulsifying oil, 300,000 gal. asph. road oil, paving with granite, asph. and bituminous pavement.....	Cyrus C. Miller, Pres. Boro. Bronx.
Connecticut...	Hartford.....	Mar. 25, 11 a.m....	Constrn. sheet asphalt pavement on 5 streets.....	Jos. Buths, Sec'y Bd. Contract.
Indiana.....	Vincennes.....	Apr. 2, 2 p.m.....	Constrn. 3,900 ft. gravel road.....	J. T. Scott, County Aud.
California.....	San Bernardino..	Apr. 8, 11 a.m.....	Constrn. highways and bridge.....	J. Bright, Jr., County Surv.
Ohio.....	Canton.....	June 1.....	Pavg. Broadway with brick block.....	R. F. Harbent, Dir. Pub. Serv.
			SEWERAGE	
Michigan.....	Lansing.....	Mar. 22.....	Constrn. 11,000 ft. of 24 to 48-in. reinforced concrete pipe, 2,500 ft. 8 to 18-in. pipe.....	W. R. Carven, Drainage Comm.
Connecticut...	Hartford.....	Mar. 25, 11 a.m....	Constrn. sewers.....	Jos Buths, Sec'y. Bd. Contract.
			WATER SUPPLY	
Florida.....	Titusville.....	May 20.....	Constrn. water works.....	Geo. M. Robbins, Chm. Bond & Trus.
			LIGHTING AND POWER	
Massachusetts.	Holyoke.....	Mar. 26, 10 a.m....	Constrn. retort house for gas works, coal shed, conveyors, condensers, scrubbers.....	W. H. Snow, Mgr. Gas & Elec. Dept.
			FIRE EQUIPMENT	
New Jersey...	Paterson.....	Mar. 24, 4 p.m.....	Constrn. engine house.....	City Clerk.
			BRIDGES	
Indiana.....	South Bend.....	Mar. 18, 11 a.m....	Constrn. 3 flat top I-beam bridges.....	Clarence Sedgwick, Aud.
Nebraska.....	Kearney.....	Mar. 22, noon.....	Furn. bridge timbers.....	J. H. Dean, County Clk.
			MISCELLANEOUS	
New York....	New York.....	Mar. 14, 2 p.m.....	Constrn. trolley tracks at bridge plazas.....	A. J. O'Keefe, Comm.
Pennsylvania..	Pittsburgh.....	Mar. 25.....	Excavatg. and lowering grade of Grant street.....	J. E. Armstrong, Dir. Pub. Wks.
Iowa.....	Council Bluffs...	Apr. 11, noon.....	Bldg. township hall for Garner Township.....	Fred Childs, Chm. Trustees.

STREET IMPROVEMENTS

Washington, D. C.—Resurfacing of portions of 17 streets of capital at cost of about $125,000 will be shortly commenced by Engineer Department of District.

Jacksonville, Fla.—Purchase of three new street sprinklers has been authorized.

Tampa, Fla.—Board of Public Works has decided to recommend that North blvd., from Grand Central ave. through to city limits, be paved with vitrified brick, West Tampa to pave onto that connection; this affording route through from downtown Tampa and Hyde Park to West Tampa, by one of shortest ways.

Atlanta, Ga.—South Moreland ave., from Flat Shoals ave. to Ormewood ave., will be widened by city and county to 70 ft., present width being only about 50 ft.

Indianapolis, Ind.—Owing to fact that low bidders for brick and asphalt made error in their bids, Board of Public Works has rejected all proposals for paving Wallace st., from Washington to New York sts. Low bidder on brick neglected to include resolution number in his bid, making bid irregular. Low bidder for asphalt asked $1,800 for paving street and alley intersections, instead of $180. New Bids will be asked.

Indianapolis, Ind.—Resolutions have been adopted for improving of various city streets.

Indianapolis, Ind.—Property owners along North Meridian st., between 64th and 71st sts., outside city limits, are arranging to let contract for boulevard to cost $15,000. It will be 40 ft. wide and will be of crushed stone and oil construction. When work is completed effort will be made to have Board of Park Commissioners take charge of and maintain boulevard.

South Bend, Ind.—Eighteen miles of new roads in St. Joseph County will shortly be begun, judging from present indications in County Commissioners' Court.

Leavenworth, Kan.—Resolution will be prepared for grading, curbing and guttering of Sixth ave., between Frank st. and Ohio ave.

Leakesville, Miss.—Board of Supervisors of Greene County passed order for clerk to give notice to taxpayers that at April meeting they would take steps to issue $25,000 10-year 5 per cent. bonds for purpose of improving roads of county.

Elizabeth, N. J.—Macadamizing of roads in Linden Borough, Roselle Park, Roselle, Cranford and Union Township have been authorized.

Clyde, N. Y.—Seven miles of good roads will be built this spring, commencing at corner of Glasgow and Ford sts. and extending west to Lyons. This is continuation of road already built from Savannah to Clyde.

Ottawa, O.—Commissioners of Putnam County will receive sealed bids up to 12 o'clock noon, March 28, at Auditor's office, for road improvement bonds in several townships of county.

Youngstown, O.—Bids will be received until 2 p.m., April 5, by Road Commissioners of Mahoning County, District No. 1, for purchase of bonds to amount of $200,000 for building and improving roads of said district. Frank Agnew, Secretary.

Lawton, Okla.—Bolger, Moser & Willaman Co., of Chicago, have been awarded total bond issue of $159,952.25 for paving, curbing and guttering 48 city blocks.

Muskogee, Okla.—Council has authorized improving of Garland ave., from 20th st. to 29th st. Chas. Wheeler, City Clerk.

Brownsville, Ore.—Plans are being made for large amount of paving.

Livingston, Tenn.—Issuance of $150,000 bonds for building pikes is being discussed.

Brownsville, Tex.—Paving of downtown streets has been planned. Creosoted wood blocks on concrete base will be used.

Corpus Christi, Tex.—Council will discuss street paving, and may decide on streets to be passed, in case election to be held March 25, for voting $150,000 bonds for paving, is carried.

San Antonio, Tex.—Bids will be advertised for grading Fredericksburg rd., from the 13¾-mile point to old Boerne stage rd.; Boerne rd., from Fredericksburg rd. to junction of Monarch rd., and Monarch rd., from junction of old Boerne rd. to Pena Hill rd.

Provo, Utah—Construction of road from State st. to shores of Utah Lake, is being considered by County Commissioners.

Manassas, Va.—Movement to have proposed Quebec-Miami highway traverse this section of Prince William County is being discussed. It is proposed to raise sum of $25,000 by bond issue.

Portsmouth, Va.—Definite steps have been taken by Street Committee of Council and City Engineer for paving of Chestnut st., from Glasgow to South sts., with granite blocks, and setting of either bluestone curbing or granite curbing.

CONTRACTS AWARDED

Indianapolis, Ind.—To Aaron M. Lisby, of Coatesville, to build proposed three-mile road between Marion and Hendricks County, at $6,095. Proposed road lies along north part of Marion County.

Shelbyville, Ind.—By County Commissioners of Shelby County, to William Avery, for macadamizing Wasson rd., mile in length, at $4,150, and for macadamizing Neibert rd., 1¼ miles in length, contract price being $4,750. Both roads are in Noble Township.

Leavenworth, Kan.—For paving north and south alley in block 26, Fackler's addition, to Fred Tarry & Sons, at $890.

Louisville, Ky.—By City, for improvements to various streets, to various contractors: Louisville Asphalt Co., L. R. Figg Co., Henry Bickel Co., G. W. Gosnell, F. G. Breslin, American Standard Asphalt Co., Jefferson County Construction Co., and G. W. Younger Co.

Wilkes-Barre, Pa.—By Street Committee, to Warner, Quinlan Co., for paving with asphalt a portion of Horton st.

Chehalis, Wash.—By Lewis County Commissioners, for mile of concrete road 16 ft. in width to connect with hard surface and State aid road now built east of Chehalis, to Keasal Construction Co., of Tacoma, at $14,447.51, or $2.73 per lin. ft. Other bids submitted were: W. J. Glover, of Centralia, who bid $15,313.25, and George M. Savage, of Tacoma, who bid $16,937.30.

Seattle, Wash.—By Board of Public Works, for planking Nickerson st. subdivision No. 1, to John G. Engstrom, at $2,983.

SEWERAGE

Oxford, Ala.—Construction of complete sewer system has been authorized.

Pottstown, Pa.—Surveys are being made for proposed sewage system.

Reading, Pa.—Sum of $9,000 will be added to sewer appropriation to install two 60,000,000-gal. pumps for disposal plant.

Racine, Wis.—City is considering ordinance for submission to people providing for trunk sewer bond issue of $185,000.

WATER SUPPLY

Hartford, Conn.—Board of Finance has approved of proposed appropriation of $50,000 for east side pumping station.

Macon, Ga.—Bids will be received by Board of Water Commissioners up to noon, April 8, for 50 City of Macon waterworks bonds, of par value of $1,000 each. W. H. Fetner, Chairman.

Peabody, Mass.—Town contemplates putting meters to water pipes running into houses of Peabody. It is claimed that all household pipes in Peabody may be meter for $20,000.

Perth Amboy, N. J.—According to report by Thomas Grieve to Board of Water Commissioners it will cost city about $12,000 to install booster system for increasing water pressure on high parts in northwestern section of city. Mr. Grieve figured cost of various items for system as follows: Pump and motor, $1,500; standpipe, 60 ft. high, 40 ft. in diameter with a capacity of 720,000 gal., $5,200; iron foundation to raise the standpipe 20 or 25 ft., $1,500; extra mains necessary, $2,500; land for pump, motor and standpipe, $900; building to house motor and pumps, $400. Total approximate cost, $12,000.

Media, Pa.—Media Borough Council has purchased franchise and property of Nether Providence Water Co. at cost of $10,050.

Centralia, Wash.—Ordinance providing for installation of municipal gravity water system in Centralia has passed its second reading by City Commission. Election to vote bonds with which to build plant will be held on April 3.

LIGHTING AND POWER

Wilmington, Del.—Establishment of municipal lighting plant is being discussed.

Manchester, Ga.—City Council has awarded issue of $15,000 electric light bonds to John W. Dickey, of Augusta, Ga.

Dayton, O.—Question of securing electric light for Shiloh Station will be taken up at meeting of the Shiloh Improvement Association.

McKeesport, Pa.—At meeting of Water and Light Committee of Councils fran-